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Bulletin of
The Industrial Commission
# of Ohio

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DEPARTMENT OF INVESTIGATION AND STATISTICS
REPORT NO. 31

Statistics of
Mines and Quarries in Ohio
1916

THE INDUSTRIAL COMMISSION OF OHIO

T. J. Duffy, Chairman
J. D. Clark
Herbert L. Eliot
Robert S. Hayes, Secretary

George F. Miles, Chief Statistician
Wilbur F. Maxwell, Assistant Statistician

REPORTS PUBLISHED BY THE DEPARTMENT OF INVESTIGATION AND STATISTICS OF THE INDUSTRIAL COMMISSION OF OHIO.

The Department of Investigation and Statistics of the Industrial Commission of Ohio succeeded the Bureau of Labor Statistics, September 1, 1913. The series of annual reports issued by that Bureau, therefore, terminated with the thirty-seventh annual report, for the year ending December 31, 1912. The reports of the Department of Investigation and Statistics are issued at irregular intervals, and are numbered consecutively, beginning with No. 1. Each number is devoted to one general subject. These reports will be furnished free upon application, postage prepaid to residents of Ohio. They will be furnished to non-residents, free, upon receipt of postage, or authorization to send same express C. O. D.

No. 1. Wages and Hours of Labor of Women and Girls Employed in Mercantile Establishments in Ohio in 1913. (Out of print.)
No. 2. Accident Claims Filed Under the Workmen's Compensation Act of Ohio, March 1, 1912 to December 31, 1913. (Out of print.)
No. 3. Statistics of Mines and Quarries in Ohio, 1913.
No. 4. Industrial Accidents in Ohio, January 1, 1914 to June 30, 1914.
No. 5. Union Scale of Wages and Hours of Labor in Ohio on May 15, 1914.
No. 6. Industrial Accidents in Montgomery County, Ohio, from July 1 to December 1, 1914.
No. 7. Industrial Accidents in Franklin County, Ohio, from July 1 to December 31, 1914.
No. 8. Industrial Accidents in Cuyahoga County, Ohio, from July 1 to December 31, 1914.
No. 9. Industrial Accidents in Hamilton County, Ohio, from July 1 to December 31, 1914.
No. 10. Industrial Accidents in Lucas County, Ohio, from July 1 to December 31, 1914.
No. 11. Industrial Accidents in Mahoning County, Ohio, from July 1 to December 31, 1914.
No. 12. Industrial Accidents in Summit County, Ohio, from July 1 to December 31, 1914.
No. 13. Industrial Accidents in Stark County, Ohio, from July 1 to December 31, 1914.
No. 14. Cost of Living of Working Women in Ohio.
No. 15. Work of the Free Labor Exchanges of Ohio, for the Year Ending June 30, 1915.
No. 16. Rates of Wages, Hours of Labor, and Fluctuation of Employment in Ohio in 1914. (Out of print.)
No. 17. Inspection of Workshops, Factories and Public Buildings in Ohio, September 1, 1913, to December 31, 1914.
No. 18. Physical Examination of Wage Earners in Ohio in 1914.
No. 19. Statistics of Mines and Quarries in Ohio, 1914.
No. 20. Union Scale of Wages and Hours of Labor in Ohio on May 15, 1915.
No. 21. Industrial Accidents in Ohio, January 1, 1914, to June 30, 1915.
No. 22. Report on Employers Carrying Self-Insurance as Provided Under Section 22 of The Workmen's Compensation Act.
No. 23. Mediation of Industrial Disputes in Ohio, January, 1914, to June 30, 1916. (Out of print.)
No. 24. Job Selling in Industrial Establishments in Ohio. (Out of print.)
No. 25. Statistics of Mines and Quarries in Ohio in 1915.
No. 26. Inspection of Workshops, Factories and Public Buildings for the Year Ending December 31, 1915.
No. 27. Work of the Free Labor Exchanges in Ohio for the Year Ending June 30, 1916.
No. 28. Rates of Wages, Hours of Labor and Fluctuation of Employment in Ohio for the Year Ending December 31, 1915.
No. 29. Infections Following Industrial Accidents in Ohio.
No. 30. Union Scale of Wages and Hours of Labor in Ohio on May 15, 1916.
No. 31. Statistics of Mines and Quarries in Ohio in 1916.

THE INDUSTRIAL COMMISSION OF OHIO

DEPARTMENT OF INVESTIGATION AND STATISTICS

REPORT No. 31

STATISTICS OF MINES and QUARRIES IN OHIO

1916

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INTRODUCTION.

This report presents Statistics of Mines and Quarries in Ohio for the calendar year 1916.

The first section of the report deals with coal mines and shows production, number of employes, days in operation, average wages, total annual wage and salary payments, and coal mine accidents.

The other four sections of the report deal with fire clay mines, gypsum mines, limestone quarries, and sandstone quarries. The data shown are: production, number of employes, days in operation, classified rates of wages, total annual wage and salary payments, and hours of labor per week.

All information concerning accidents in coal mines is from the claims filed under the Workmen's Compensation Act and the awards made by the Industrial Commission of Ohio under that law, with the exception of certain data relating to fatal accidents as noted in the report. All other information was furnished by the employers upon forms prepared by the Department of Investigation and Statistics. This form combined the information formerly collected on two separate forms by the Bureau of Mines and the Bureau of Labor Statistics.

In collecting the material for the present report, the Department of Mines has co-operated to the fullest extent.

Wages for 50,970 employes in mines and quarries in Ohio are shown in this report.

Rates of wages during 1916 for all other industries will be shown in Report No. 34 of the Department of Investigation and Statistics, now in process of preparation. An approximation at this time indicates that this report will show rates of wages for 1,141,584 employes.

Mr. John W. Dye had immediate charge of the examination and tabulation of the returns made by the employers of the State and prepared this report.

GEORGE F. MILES,
Chief Statistician.

Columbus, Ohio.
November 22, 1917.

COAL MINES.

PRODUCTION.

During the year ending December 31, 1916, the coal mines of Ohio produced 34,526,552 tons[a] of coal.

The total production of bituminous coal for the United States during the year, according to figures furnished by the United States Geological Survey, was 502,519,682 tons. Ohio produced 6.9 per cent of the total bituminous coal mined in the United States in 1916 and 5.1 per cent of the total in 1915.

Compared with certain preceding years, the production for 1916 shows increases and decreases as follows:

52.6 per cent greater than in 1915.
84.3 per cent greater than in 1914.
4.8 per cent less than in 1913.
.3 per cent greater than in 1910.
33.6 per cent greater than in 1905.
77.7 per cent greater than in 1900.

The average annual production for the five years, 1911 to 1915 inclusive, was 28,487,050 tons. The production for 1916 was, therefore, 21.2 per cent above the five year average.

Of the thirty coal-producing counties, 21 showed gains in production as compared with 1915, while 9 showed decreases as compared with their production for the preceding year. Belmont County shows a gain of 6,149,334 tons or 139.6 per cent, Harrison County a gain of 682,071 tons or 221.0 per cent, and Jefferson County a gain of 1,826,414 tons or 51.6 per cent over the production of the preceding year.

Eight counties each produced more than one million tons of coal during the year, and together produced 29,262,876 tons, or 84.8 per cent of the total coal product of the State. The number of tons mined in each of the eight leading counties and the per cent of the total tonnage of the State produced by each was as follows:

County.	*Tons produced in 1916.*	*Per cent of total tonnage of State.*
Belmont	10,553,088	30.6
Jefferson	5,366,393	15.5
Guernsey	4,397,262	12.7
Athens	3,743,672	10.8
Tuscarawas	1,547,110	4.5
Hocking	1,435,188	4.2
Perry	1,195,127	3.5
Meigs	1,025,036	3.0

(a) The short ton of 2,000 pounds is used throughout this report, and all figures are for total production, including all grades of coal mined.

The method of production was reported for 34,526,552 tons. Of this amount, 31,579,032 tons, or 91.5 per cent, were machine mined; 2,414,367 tons, or 7 per cent, were pick mined; and 533,153 tons, or 1.5 per cent, were produced by stripping. The proportion produced by pick mining decreased from 9.4 per cent of the total in 1915 to 7 per cent of the total in 1916.

The proportion produced by each method is shown below for certain years:

Year.	*Per cent Machine Mined.*	*Per cent Pick Mined.*	*Per cent Stripped.*
1916	91.5	7.0	1.5
1915	89.3	9.4	1.3
1914	85.4	13.8	.8
1913	89.8	10.2	...
1910	87.4	12.6	...
1905	73.6	26.4	...
1900	48.7	51.3	...

Of the eight leading coal-producing counties, 99.2 per cent of the coal produced in Guernsey County was machine-mined, 99 per cent in Belmont County, 95.4 per cent in Athens County, 92.7 per cent in Hocking County, 88.5 per cent in Perry County, 88.6 per cent in Jefferson County, 73.2 per cent in Tuscarawas County and 97.5 per cent in Meigs County.

The schedule furnished by the operators for the year ending December 31, 1916, asked for data concerning the disposition of the coal produced during that year. Table 4, on page 27, gives the results of this inquiry by counties. Of the 34,526,552 tons produced during the year —

623,040	tons were used in the operation of coal mines.
1,210,798	tons were used in manufacturing processes carried on in connection with coal mines.
1,054,972	tons were sold to local trade (including tenants).
31,636,747	tons were sold into the shipping trade, and were shipped by rail or water.
995	tons were held in stock.

MINING MACHINES.

There were 1,600 mining machines reported in use in Ohio in 1916, an increase of 157 as compared with the preceding year.

Thirteen hundred and fifty of the machines were reported from the eight leading coal-producing counties. Belmont County led with 458, and Jefferson was second with 234.

The average number of tons cut per machine for the year was 19,737 tons, an increase of 5,759 tons per machine, or somewhat more than two-fifths over the production per machine during 1915.

The number of tons cut per day per machine was slightly lower in 1916 than in 1915, being 100.2 tons per day, while in the preceding year the average number cut per day was 102 tons.

HAULAGE.

Animal haulage was reported by 436 mines, hand haulage by 219, motor by 108, motor and animal by 126, cable by 15, cable and animal by 16, and motor and cable by 8.

The number of haulage motors used showed an increase as compared with 1915, 649 being reported, while in the preceding year 570 were reported as in use.

CHARACTER OF OPENINGS.

Of the 938 mines in operation during 1916, 676 were drift openings, 134 were slope openings, 97 were shaft openings, and 13 were of combined types, while 10 were stripping mines, and 8 mines did not report character of opening.

VENTILATION.

Classified by type of ventilation, 375 of the 938 mines in operation had natural ventilation, 326 had fan ventilation, 155 had furnace ventilation, 29 had fire basket ventilation, 7 had exhaust steam ventilation, and 28 used combined types, while 10 were stripping mines, and 8 mines did not report character of ventilation.

NUMBER OF EMPLOYES.

The schedule used in 1916 asked for the average number of employes in each occupation.

Forty-one thousand, eight hundred and seventy-seven employes were reported engaged in coal mining in Ohio in 1916.

Compared with the five preceding years, the total number of employes for 1916 shows increases and decreases as follows:

0.5 per cent greater than in 1915.
11.4 per cent less than in 1914.
14.0 per cent less than in 1913.
11.9 per cent less than in 1912.
14.0 per cent less than in 1911.

One hundred or more employes were reported from each of 21 counties, while the four counties of Belmont, Athens, Jefferson and Guernsey reported together 26,842 employes, or 64.5 per cent of the total number of persons employed in coal mines in the State.

Of the total of 41,632 (a) employes, 3,511 were employed in pick mines and 38,121 were employed in machine mines. Employes in pick mines constituted 8.4 per cent of the total number of employes, while in 1915, 9.4 per cent of the employes in coal mines were reported from pick mines.

(a) 245 employes engaged in stripping coal are not included in any tables except fluctuation of employment tables.

The 41,632 (a) employes in coal mines were distributed by main occupation groups as follows:

Occupation.	Number of Employes in Pick Mines.	Number of Employes in Machine Mines.	Total.
Pick miners	2,746	570	3,316
Machine runners and helpers	....	3,161	3,161
Loaders (including drillers and shooters)	....	23,266	23,266
Inside day hands	508	7,438	7,946
Outside day hands	257	3,686	3,943
Total	3,511	38,121	41,632

DAYS WORKED.

The pick miners employed in pick mines averaged 182 working days each during 1916, as compared with 168 days during 1915.

The irregularity of employment during the year is shown by the following table, which summarizes the data shown by counties in Table 18, on page ——. Of the 2582 pick miners in pick mines —

259, or 10.0 per cent, worked less than 50 days.
344, or 13.3 per cent, worked 50 but less than 100 days.
270, or 10.5 per cent, worked 100 but less than 150 days.
444, or 17.2 per cent, worked 150 but less than 200 days.
531, or 20.6 per cent, worked 200 but less than 250 days.
526, or 20.4 per cent, worked 250 but less than 300 days.
208, or 8.1 per cent, worked 300 days or more.

The loaders in machine mines averaged 197 working days each, as compared with 137 days during 1915. The following table summarizes for loaders the information given in detail by counties in Table 18, page 39, with regard to days worked. Of the 22,969 (b) loaders reported as employed at some time during the year —

289, or 1.3 per cent, worked less than 50 days.
982, or 4.3 per cent, worked 50 but less than 100 days.
2,393, or 10.4 per cent, worked 100 but less than 150 days.
6,728, or 29.3 per cent, worked 150 but less than 200 days.
10,387, or 45.2 per cent, worked 200 but less than 250 days.
1,821, or 7.9 per cent, worked 250 but less than 300 days.
369, or 1.6 per cent, worked 300 days or over.

---

[a] 245 employes engaged in stripping coal are not included in any tables except fluctuation of employment tables.

[b] 297 loaders, including drillers and shooters, are not carried because of incomplete data.

FLUCTUATION OF EMPLOYMENT.

Seven hundred and fifty-two mines reported the number of employes on the fifteenth of each month, or for the payroll nearest the fifteenth. The following table compares the fluctuation of employment by months, during 1916, as reported by 752 mines, with the fluctuation for 1915, as reported by 827 mines:

Month.	*Number of employes 1915 (827 mines.).*	*Number of employes 1916 (752 mines.)*
January	26,788	36,348
February	25,917	36,980
March	25,049	36,855
April	25,316	29,792
May	23,233	32,839
June	27,849	35,378
July	29,174	37,296
August	29,007	38,399
September	31,818	39,217
October	33,379	39,937
November	35,389	40,541
December	36,477	40,754

The month of maximum employment during 1916 was December, when 752 firms who reported had on their payrolls 40,754 men, while the month of minimum employment was April, when 29,792 men were in their employ. The minimum number employed represents a variation from the maximum of 10,926, of 26.9 per cent.

TONNAGE PER EMPLOYE.

During 1916, the average production per pick miner in pick mines was 659 tons, while in 1915 the average per pick miner for the year was 591 tons. The average production per machine runner or helper for 1916 was 9,966 tons, as compared with 6,395 tons for 1915, while the average annual production per loader (including drillers and shooters) increased from 841 tons in 1915 to 1,359 tons in 1916.

The production per employe per day, however, shows very little variation from preceding years. The average number of tons mined per day per pick miner in pick mines was 3.6 tons, while the production per day for 1915 was 3.5 tons per pick miner. The average production per day for machine runners and helpers was slightly higher for 1916 than for 1915, being 50.6 tons as compared with 46.7 tons for 1915, while the daily output per loader (including drillers and shooters), was .8 per cent greater for 1916 than for 1915, being 6.9 tons as compared with 6.1 tons for 1915.

AVERAGE WAGES.

The schedules furnished by operators for 1916 included data as to the average wages paid to employes in coal mines by occupation. Every effort was made to secure accurate data, but considerable difficulty was encountered in securing exact information for certain occupations, particularly loaders. The best that could be done was to base loaders' wages on gross earnings, which includes the amount paid for loading, shooting, and drilling, together with the amount paid for "dead work." The average wage paid pick miners in the wage table below and in the detailed table by counties is the average both for pick miners in pick mines and in machine mines. The following table shows by occupation the average wages as reported for 1916, while the same information by counties will be found in Table 22, pages 44 to 48.

AVERAGE WAGES OF EMPLOYES IN COAL MINES, BY OCCUPATION, FOR THE YEAR ENDING DECEMBER 31, 1916.

Occupation.	Number of employes.	Average rate of wages per day.
Pick miners	3,316	$3.10
Machine runners and helpers	3,161	4.42
Loaders (including drillers and shooters)	23,266	3.26
Track layers	653	2.93
Track layers' helpers	321	2.75
Trappers	728	1.38
Bottom cagers	189	2.90
Drivers	2,245	2.88
Snappers	62	2.82
Trip rope riders	90	2.91
Water haulers	111	2.93
Machine haulers	47	2.94
Timbermen	679	2.93
Pumpers	259	2.78
Pipemen	19	2.90
Electricians	209	3.42
Electricians' helpers	136	2.95
Motormen	634	2.96
Motormen's helpers	368	2.90
Other inside day labor	1,196	2.78
Engineers	390	2.99
Firemen	265	2.66
Dynamo men	39	2.98
First blacksmith	273	3.20
Second blacksmith	106	2.99
Blacksmiths' helpers	30	2.76
Carpenters	237	2.83
Dumpers	424	2.56
Trimmers	722	2.56
Greasers	133	1.99
Couplers	191	2.15
Stable boss	162	2.27
Other outside help	971	2.50

41,326

TOTAL WAGE AND SALARY PAYMENTS.

The total wage and salary payment for the 789 mines reporting on that point for the year 1916 aggregated $27,810,534. Of this amount, $27,478,784, or 98.9 per cent of the total payroll, went to wage earners, exclusive of office employes, while $331,750, or 1.2 per cent of the total, went to pay the clerical office force. Salaries paid superintendents were excluded from the payroll as reported by the operators.

NUMBER OF ACCIDENTS.

The Workmen's Compensation Act of Ohio is compulsory for all employers of five or more persons in the State, and the claims filed with the Department of Claims of the Industrial Commission thus include those filed for injuries received in all coal mines of the State, where five or more persons are employed.

In accordance with the provisions of the General Code of Ohio, all fatal accidents are reported immediately after occurrence to the Chief Inspector of Mines, and all such accidents are investigated by him. The number of fatal accidents reported to him is the number for the calendar year, and it includes fatal accidents in mines employing less than five persons. The number of fatal accidents analyzed and tabulated by the Department of Investigation and Statistics, however, is the number for which awards were made during the statistical year regardless of the date of the occurrence of the accident.

During the calendar year 1916, 108 fatal accidents were reported to the Inspector of Mines. This number includes 32 accidents which were not tabulated by the Department of Investigation and Statistics. Of these —

24 were not passed upon and awards made until 1917.
1 was still pending before the Industrial Commission when the present report was closed.
4 occurred in mines employing less than five persons, and the Workmen's Compensation Act, therefore, did not apply to them.
3 in which no claims had been filed with the Industrial Commission up to the time of this tabulation.

During the year 1916, 86 fatal accidents for which awards were made were tabulated by the Department of investigation and Statistics.

During the same period, 2 claims for awards in fatal cases were disallowed. In both cases, the cause for disallowance was the fact that according to the evidence presented, death was due, not to injury in the course of employment, but to natural causes.

The 86 awards made during the year ending December 31, 1916, included 8 awards which were made for deaths which occurred during 1915, these accidents having been reported to the Inspector of Mines during that year. Thus, there is a difference of 22 fatal accidents between the data secured through the two sources.

In those tables where tonnage and number of employes are correlated with deaths, 108, the number reported during the calendar year to the Inspector of Mines, has been used. In the other tables 86, the number for which awards were made during 1916, has been used.

All data appearing in this report as to the number of non-fatal accidents are based upon claims approved by the Industrial Commission and tabulated by the Department of Investigation and Statistics. During 1916, 3,560 awards were made for non-fatal accidents.

ACCIDENTS IN RELATION TO NUMBER OF MEN EMPLOYED AND TONS OF COAL PRODUCED.

The important question with regard to accident data is whether the number of accidents is increasing or decreasing when considered in relation to the number of men exposed to risk. The only really accurate measure is the number of accidents per hours exposure, or the so-called "Man-hour" unit of European accident statistics. The mining industry, however, because of the nature of the work, is extremely difficult to measure by this standard, and data are not available for it. The only measure which we have is the number of men employed per accident and the number of tons of coal mined per accident, these comparisons being limited to fatal accidents as reported to the Division of Mines, and to accidents resulting in disability of more than three weeks as tabulated by the Department of Investigation and Statistics from claims allowed by the Industrial Commission.

Conditions in the coal industry of the State and the completeness of accident reports must be taken into consideration in interpreting the accident data for 1916. Taking up first the question of the frequency of fatal accidents, we find that while in 1915 one man was killed to every 628 (a) employed, in 1916 one man was killed to every 385 men employed. On the coal schedule for 1916, operators were asked to report by occupations, the average number of employes, and it is on this figure that the number of employes in relation to tonnage is based. As elsewhere noted, however, in practice the operators reported the normal number, the total number of employes reported exceeding by 162 the figures for 1915. By reference to the number of days worked by pick miners and by loaders, as shown in Table 17, page 38, it will be seen that while pick miners averaged 168 working days in 1915, in 1916, they averaged 182 days. In

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(a) Two accidents occurring in 1915 and included in Report No. 25, Department of Investigation and Statistics, entitled "Statistics of Mines and Quarries in Ohio, 1915," as accidents resulting in temporary disability of more than three weeks, resulted fatally, and have been added to the fatal accidents for 1915. The number of employes and number of tons of coal mined per accident of this class have been revised accordingly.

1915 loaders averaged 137 days, while in 1916, their average working time was 197 days. Thus, the actual exposure to risk was increased in proportion to the lengthened working time, and no exaggerated importance must be attached to the fact that one man out of every 385 was killed.

AWARDS UNDER THE WORKMEN'S COMPENSATION ACT.

During the twelve months ending December 31, 1916, the claims of 3,646 injured coal mine employes, or of families of deceased employes, were allowed by the Industrial Commission of Ohio under the Workmen's Compensation Act. The total amount awarded was $382,620.96. This amount does not include the cost of medical and hospital attention in establishments where the employer carried self-insurance under the State Plan, and was, therefore, required to furnish medical and hospital attention to injured employes without expense to the employe.

Awards in new cases were made during 1916, for —

86 fatal accidents.
98 accidents resulting in permanent partial disability.
3462 accidents resulting in temporary disability.

The awards for these 3,646 accidents aggregated $382,620.96. The distribution of these awards was —

$159,669.00 for death benefits.
166,618.00 for compensation.
(a) 44,915.00 for medical and hospital expenses.
11,418.96 for funeral expenses.

Thus in the year second in production in the history of the State since 1872, the actual money cost of coal mine accidents was more than one-third of a million dollars. The amount of the awards does not indicate the total money loss from industrial accidents as, under the law, awards for compensation are made on the basis of two-thirds average earnings, maximum award twelve dollars per week, minimum five dollars per week. No compensation is provided for the first seven days' disability in accidents causing temporary disability; and in fatal cases, the death benefit continues only six years, without regard to the age of the person fatally injured. In order, therefore, to determine the loss to the community from industrial accidents, it is necessary to determine the time lost by reason of such accidents.

(a) Exclusive of any additional expenditures for medical and hospital attention by employers who carry self-insurance under Section 22 of the Workmen's Compensation Act and who are required to furnish medical and hospital care without cost to the injured person.

TIME COST OF COAL MINE ACCIDENTS.

The time lost from coal mine accidents for which awards were made during the year can be computed approximately by combining the life expectancy of the men killed, the number of days for which compensation was allowed under the Ohio Law for accidents causing permanent partial disability, and the number of days actually lost from accidents causing temporary disability.

In every fatal case, the age of the deceased was known. Computations of time lost were, therefore, based on 86 fatal accidents, 98 accidents resulting in permanent partial disability, and 3,462 accidents resulting in temporary disability.

Computed on the basis indicated, the time lost as a result of coal mine accidents for which awards were made during 1916, was equal to the entire time of 2,991 men for one year. Expressed in another way, the coal mine accidents in 1916 resulted in loss of time as great as though all the male wage earners of a town as large as Ironton had been laid off for a year.

FATAL ACCIDENTS.

The 86 fatal accidents for which awards were made during the year ending December 31, 1916, cost in death benefits, medical and hospital, and funeral expenses $173,384.96 (a). Computations of life expectancy made on the basis of the Carlisle actuarial tables, shows that these 86 lives cost the community in time lost a total of 2,620.59 years.

The 86 fatal accidents for which awards were made during this period were distributed by cause as follows —

Falls of stone, slate, and coal (including falls of roof)	52
Mine cars and motors	18
Explosion, powder	6
Electricity	3
Miscellaneous	7
Total	86

Thus it will be seen that during the year sixty per cent of the fatal accidents were caused by falls of stone, slate or coal. Under this heading are included those accidents ascribed to falls of roof.

The causes of fatal accidents are shown in detail by counties in Table 28, pages 55 to 57.

The distribution of the fatal accidents due to falls of stone, slate and coal (including falls of roof) by counties is of some interest. The

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(a) Exclusive of medical and hospital expenses paid by firms carrying self-insurance under the State Plan.

52 accidents ascribed to this group of causes were distributed by counties as follows —

County	*Number of accidents ascribed to falls of stone, slate and coal (including falls of roof.)*
Belmont	15
Guernsey	9
Athens	8
Jefferson	6
Meigs	6
Noble	2
Lawrence	2
Hocking	1
Jackson	1
Perry	1
Tuscarawas	1
Total	52

ACCIDENTS RESULTING IN PERMANENT PARTIAL DISABILITY.

Ninety-eight awards for accidents resulting in permanent partial disability were made during the year ending December 31, 1916. The total amount awarded for these claims was $50,238 (a). It is impossible for these cases to make any statement as to the actual loss of working efficiency resulting from a handicap which a man must carry through life. Awards are made for definite periods, according to the nature of the disability. The total number of days for which compensation was paid under the Ohio law was 30,757 days or 84.27 years. The causes of these accidents are shown in detail by counties in Table 29, pages 58 and 59.

The four principal causes of accidents that result in permanent partial disabilities, causing physical handicaps that the workers must carry through life, are as follows —

Cause.	*Number of permanent partial disabilities ascribed to each cause.*
Accidents due to hand tools and simple apparatus	20
Coupling and uncoupling cars and trucks	16
Falls of roof	14
Mining machines	10

(a) Exclusive of medical and hospital expenses paid by firms carrying self-insurance under the State Plan.

The sixty accidents enumerated above comprise 61.2 per cent of the total number of accidents resulting in permanent partial disability.

The losses sustained by employes who suffered permanent partial disability are shown below —

SUMMARY SHOWING LOSSES SUSTAINED BY EMPLOYES IN INJURIES CAUSING PERMANENT PARTIAL DISABILITY.

Loss.	*Number of cases.*
ONE EYE —	
Total loss of vision	15
More than one-half loss of vision	7
One-half loss of vision	2
Less than one-half loss of vision	4
ONE ARM —	
Total loss of one arm	1
THUMB —	
One-half loss	2
THUMB AND TWO FINGERS —	
Total loss	1
FIRST, SECOND AND THIRD FINGERS —	
Two-thirds loss	1
FIRST AND SECOND FINGERS —	
Two-thirds loss	1
One-third loss	2
SECOND AND THIRD FINGERS —	
One-third loss	1
SECOND, THIRD AND FOURTH FINGERS —	
Two-thirds loss of second and one-third loss of third and fourth fingers	1
THIRD AND FOURTH FINGERS —	
Total loss of third and one-third loss of fourth fingers	1
Total loss of fourth and one-third loss of third fingers	1
FIRST FINGER —	
Total loss	2
Two-thirds loss	1
One-third loss	6
SECOND FINGER —	
Total loss	1
Two-thirds loss	3
One-third loss	7
THIRD FINGER —	
Total loss	5
One-third loss	8

Loss.	*Number of cases.*
FOURTH FINGER —	
Total loss	5
Two-thirds loss	1
One-third loss	3
LEG —	
Loss of leg between knee and ankle	2
FOOT —	
Total loss of foot due to ankylosis	2
One-half loss of foot due to ankylosis	1
TOE OR TOES —	
First, second, third, fourth and fifth toes	1
Second, third, fourth and fifth toes	2
First and second toes	2
First toe	2
Second toe	4
Total	98

ACCIDENTS RESULTING IN TEMPORARY DISABILITY.

During 1916, awards were made for 2,793 temporary disabilities of more than seven days resulting from industrial accidents. Their aggregate cost, including compensation and medical and hospital bills, was $156,690.00 (a). During the same period, awards were made for 669 temporary disabilities of seven days or less which resulted from industrial accidents. The total medical and hospital bills for these accidents was $2,308.00 (a). No compensation is awarded in cases of disability for seven days or less. The total loss of working time as a result of these 2,661 accidents resulting in temporary disability only was 104,438 days or 286.13 years.

Accidents resulting in temporary disability are classified by cause in Table 29, pages 60 to 65, and by nature of injury in Table 30, page 66.

(a) Exclusive of medical and hospital expenses paid by firms carrying self-insurance under the State Plan.

The distribution of those accidents resulting in temporary disability and ascribed to falls of stone, slate and coal, (including falls of roof) by counties is given below:

County.	*Number of accidents resulting in temporary disability ascribed to falls of stone, slate, and coal (including falls of roof.)*
Belmont	366
Jefferson	171
Guernsey	89
Athens	74
Perry	35
Meigs	31
Tuscarawas	30
Columbiana	19
Stark	17
Jackson	15
Noble	15
Harrison	14
Muskingum	12
Coshocton	10
Hocking	9
Gallia	3
Lawrence	3
Carroll	2
Portage	2
Summit	2
Morgan	1
Vinton	1
Total	921

It will be noted that of the 921 accidents resulting in temporary disability and ascribed to falls of stone, slate and coal, 366, or 39.7 per cent. occurred in Belmont County, which produced 30.6 per cent of the coal.

DURATION OF DISABILITY IN ACCIDENTS RESULTING IN TEMPORARY DISABILITY.

Three thousand four hundred and sixty-two claims for temporary disability resulted from injuries received in coal mines during 1916. The duration of disability in these accidents is striking evidence of the hazard in coal mine employment. Of these 3,462 accidents, the disability terminated for—

669, or 19.3 per cent, within the first week.
609, or 17.6 per cent, within the second week.
632, or 18.3 per cent, within the third week.
446, or 12.9 per cent, within the fourth week.
915, of 26.5 per cent, within the fifth to the thirteenth week, inclusive.
191, or 5.5 per cent, within the fourteenth week or later.

Thus it will be seen that 2,793 cases, or 80.7 per cent of the accidents, resulted in a disability of more than one week, while 1,106, or 32 per cent, resulted in a disability of more than five weeks.

TABLE 1—COAL PRODUCTION FOR THE YEAR ENDING DECEMBER 31, 1916, COMPARED WITH THE YEAR ENDING DECEMBER 31, 1915, BY COUNTIES.

County.	Tons Produced.		Gain.		Loss.	
	1915.	1916.	Tons.	Percent.	Tons.	Percent.
Athens	2,536,793	3,743,672	1,206,879	47.6		
Belmont	4,403,754	10,553,088	6,149,334	139.6		
Carroll	328,407	326,714			1,693	.5
Columbiana	543,943	518,862			25,081	4.6
Coshocton	237,568	316,045	78,477	33.0		
Gallia	7,350	6,883			467	6.4
Guernsey	3,247,938	4,397,262	1,149,324	35.4		
Harrison	308,570	990,641	682,071	221.0		
Hocking	1,421,117	1,435,188	14,071	1.0		
Holmes	16,464	14,826			1,638	9.9
Jackson	572,941	727,999	155,058	27.1		
Jefferson	3,539,979	5,366,393	1,826,414	51.6		
Lawrence	131,971	166,261	34,290	26.0		
Mahoning	24,167	28,842	4,675	19.3		
Medina	7,717	9,205	1,488	19.3		
Meigs	954,281	1,025,036	70,755	7.4		
Monroe	544	988	444	81.6		
Morgan	105,276	258,721	153,445	145.8		
Muskingum	392,332	396,289	3,957	1.0		
Noble	608,735	864,695	255,960	42.0		
Perry	1,172,687	1,195,127	22,440	1.9		
Portage	60,396	69,432	9,036	15.0		
Scioto	2,443	617			1,826	74.7
Stark	371,683	335,487			36,196	9.7
Summit	51,432	38,260			13,172	25.6
Trumbull	1,182	1,116			66	5.6
Tuscarawas	1,400,163	1,547,110	146,947	10.5		
Vinton	105,806	106,376	570	.5		
Washington	653	421			232	35.5
Wayne	70,754	84,996	14,242	20.1		
State	22,627,046	34,526,552				
Net gain for State.						
Tons			11,899,506			
Percent				52.6		

TABLE 2—COAL PRODUCTION FOR THE YEAR ENDING DECEMBER 31, 1916, CLASSIFIED ACCORDING TO METHOD OF PRODUCTION. BY COUNTIES.

County.	Tons.				Percent.		
	Pick Mined.	Machine. Mined.	Stripped.	Total.	Pick Mined.	Machine. Mined.	Stripped.
Athens	173,966	3,569,706	....	3,743,672	4.6	95.4	....
Belmont	102,002	10,451,086	....	10,553,088	1.0	99.0	....
Carroll	61,488	265,226	....	326,714	18.8	81.2	....
Columbiana	65,498	453,364	....	518,862	12.6	87.4	....
Coshocton	167,394	148,651	....	316,045	53.0	47.0	....
Gallia	5,833	1,050	....	6,883	84.7	15.3	....
Guernsey	34,671	4,362,591	....	4,397,262	.8	99.2	....
Harrison	27,193	896,235	67,213	990,641	2.7	90.5	6.8
Hocking	105,304	1,329,884	....	1,435,188	7.3	92.7	....
Holmes	14,826	....	....	14,826	100.0	....	....
Jackson	340,693	387,306	....	727,999	46.8	53.2	....
Jefferson	181,722	4,755,561	429,110	5,366,393	3.4	88.6	8.0
Lawrence	165,416	845	....	166,261	99.5	.5	....
Mahoning	20,515	8,327	....	28,842	71.1	28.9	....
Medina	9,205	....	....	9,205	100.0	....	....
Meigs	25,374	999,662	....	1,025,036	2.5	97.5	....
Monroe	988	....	....	988	100.0	....	....
Morgan	1,090	257,631	....	258,721	.4	99.6	....
Muskingum	96,460	299,829	....	396,289	24.3	75.7	....
Noble	9,975	854,720	....	864,695	1.2	98.8	....
Perry	137,034	1,058,093	....	1,195,127	11.5	88.5	....
Portage	31,009	38,423	....	69,432	44.7	55.3	....
Scioto	617	....	....	617	100.0	....	....
Stark	145,042	190,445	....	335,487	43.2	56.8	....
Summit	38,260	....	....	38,260	100.0	....	....
Trumbull	1,116	....	....	1,116	100.0	....	....
Tuscarawas	378,479	1,131,801	36,830	1,547,110	24.5	73.2	2.4
Vinton	19,823	86,553	....	106,376	18.6	81.4	....
Washington	421	....	....	421	100.0	....	....
Wayne	52,953	32,043	....	84,996	62.3	37.7	....
State	2,414,367	31,579,032	533,153	34,526,552	7.0	91.5	1.5

TABLE 3—ANNUAL COAL PRODUCTION, CLASSIFIED AS PICK MINED, MACHINE MINED AND STRIPPED. 1872 TO 1916 INCLUSIVE.

(Coal was first reported to the Bureau of Mines as pick and machine mined in 1889. Prior to that date, practically the entire product was pick mined. Coal production by the stripping process was first reported to the Department of Investigation and Statistics in 1914.)

Year.	Pick Mined.	Machine Mined.	Stripped.	Total.	Per Cent of Total Production.		
					Pick Mined.	Machine Mined.	Stripped.
1872	....	....	....	5,315,294	....	....	....
1873	....	....	....	4,550,028	....	....	....
1874	....	....	....	3,267,586	....	....	....
1875	....	....	....	4,864,259	....	....	....
1876	....	....	....	3,500,000	....	....	....
1877	....	....	....	5,250,000	....	....	....
1878	....	....	....	5,500,000	....	....	....
1879	....	....	....	6,000,000	....	....	....
1880	....	....	....	7,000,000	....	....	....
1881	....	....	....	8,225,000	....	....	....
1882	....	....	....	9,450,000	....	....	....
1883	....	....	....	8,229,429	....	....	....
1884	....	....	....	7,650,062	....	....	....
1885	....	....	....	7,816,179	....	....	....
1886	....	....	....	8,435,211	....	....	....
1887	....	....	....	10,301,708	....	....	....
1888	....	....	....	10,910,946	....	....	....
1889	10,007,385	90,000	....	10,907,385	91.7	8.3	....
1890	10,640,360	1,148,499	....	11,788,859	90.3	9.7	....
1891	11,396,106	1,654,081	....	13,050,187	87.3	12.7	....
1892	12,360,828	2,239,080	....	14,599,908	84.7	15.3	....
1893	12,275,023	2,553,074	....	14,828,097	82.8	17.2	....
1894	9,354,753	2,555,466	....	11,910,219	78.5	21.5	....
1895	10,563,423	3,120,456	....	13,683,879	77.2	22.8	....
1896	9,544,259	3,368,349	....	12,912,608	73.9	26.1	....
1897	8,342,698	4,106,124	....	12,448,822	67.0	33.0	....
1898	8,805,557	5,252,598	....	14,058,155	62.6	37.4	....
1899	9,167,874	6,741,060	....	15,908,934	57.6	42.4	....
1900	9,966,872	9,457,777	....	19,426,649	51.3	48.7	....
1901	9,831,476	10,489,814	....	20,321,290	48.4	51.6	....
1902	10,489,619	13,439,648	....	23,929,267	43.8	56.2	....
1903	10,012,335	14,560,931	....	24,573,266	40.7	59.3	....
1904	8,037,360	16,546,455	....	24,583,815	32.7	67.3	....
1905	6,825,125	19,009,532	....	25,834,657	26.4	73.6	....
1906	6,500,263	20,713,232	....	27,213,495	23.9	76.1	....
1907	6,511,773	25,854,176	....	32,265,949	20.1	79.9	....
1908	4,676,869	21,610,931	....	26,287,800	17.8	82.2	....
1909	4,608,402	23,146,630	....	27,755,032	16.6	83.4	....
1910	4,341,488	30,083,463	....	34,424,951	12.6	87.4	....
1911	3,467,119	26,874,920	....	30,342,039	11.4	88.6	....
1912	3,739,536	30,674,755	....	34,444,291	10.9	89.1	....
1913	3,691,923	32,593,545	....	36,285,468	10.2	89.8	....
1914	2,586,408	16,008,553	141,446	18,736,407	13.8	85.4	0.8
1915	2,126,670	20,192,110	291,784	a22,627,046	9.4	89.3	1.3
1916	2,414,367	31,579,032	533,153	34,526,552	7.0	91.5	1.5

a Includes 16,582 tons, for which the method of production was not reported.

TABLE 4—COAL PRODUCTION FOR THE YEAR ENDING DECEMBER 31, 1916, CLASSIFIED ACCORDING TO DISPOSITION OF PRODUCT. BY COUNTIES.

County.	Total Production.	Number of Tons.				
		Used in		Sold to		In Stock.
		Operation of Mine.	Manufacturing Processes in Connection with Mine.	Local Trade.	Shipping Trade.	
Athens	3,743,672	67,814	7,778	42,894	3,625,136	50
Belmont	10,553,088	119,583	302,998	197,236	9,933,271	
Carroll	326,714	11,730	40,553	2,250	272,181	
Columbiana	518,862	8,957	18,463	39,738	451,668	36
Coshocton	316,045	4,219		52,590	259,021	215
Gallia	6,883	50		5,371	1,460	2
Guernsey	4,397,262	96,665	8,962	46,381	4,245,254	
Harrison	990,641	12,057		29,487	949,097	
Hocking	1,435,188	19,916	35,940	13,260	1,366,072	
Holmes	14,826	42		14,780		4
Jackson	727,999	48,385	49,725	26,360	603,469	60
Jefferson	5,366,393	102,372	229,972	142,332	4,891,597	120
Lawrence	166,261	737	4,590	47,011	113,915	8
Mahoning	28,842	147	1,200	26,495	1,000	
Medina	9,205	405		8,800		
Meigs	1,025,036	12,361		38,370	974,305	
Monroe	988	6		942		40
Morgan	258,721	7,960		1,671	249,090	
Muskingum	396,289	1,847		58,181	336,261	
Noble	864,695	11,959		15,113	837,623	
Perry	1,195,127	17,767	310,492	45,302	821,566	
Portage	69,432	6,080		3,798	59,554	
Scioto	617			26	591	
Stark	335,487	17,538	51,354	71,345	195,250	
Summit	38,260	5,772		6,092	26,396	
Trumbull	1,116	20		1,096		
Tuscarawas	1,547,110	34,071	121,007	108,956	1,282,616	460
Vinton	106,376	2,641	27,758	4,396	71,586	
Washington	421			421		
Wayne	84,996	11,939	11	4,278	68,768	
State	34,526,552	623,040	1,210,798	1,054,972	31,636,747	995

TABLE 5—COAL MINES REPORTED IN OPERATION DURING THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

[Seventy-five mines in which the owners did their own work and ten mines in which the operation of stripping was carried on are not included in this table. Of the latter seven employed more than ten men and three less than ten during the year.]

County.	Number of mines reporting ten men or more.	Number of mines reporting less than ten men.	Total number of mines reporting.
Athens	50	13	63
Belmont	65	34	99
Carroll	7	7	14
Columbiana	10	12	22
Coshocton	11	27	38
Gallia	....	14	14
Guernsey	24	15	39
Harrison	6	33	39
Hocking	24	12	36
Holmes	....	17	17
Jackson	32	31	63
Jefferson	30	33	63
Lawrence	8	20	28
Mahoning	2	10	12
Medina	....	3	3
Meigs	15	12	27
Monroe	....	1	1
Morgan	1	2	3
Muskingum	11	26	37
Noble	3	14	17
Perry	28	29	57
Portage	1	1	2
Scioto	1	....	1
Stark	19	37	56
Summit	1	1	2
Trumbull	....	2	2
Tuscarawas	29	51	80
Vinton	4	7	11
Washington	....	3	3
Wayne	3	1	4
State	385	468	853

TABLE 6—MINING MACHINES IN USE, AND AVERAGE NUMBER OF TONS OF COAL CUT PER MACHINE PER YEAR AND PER DAY, 1916 COMPARED WITH 1915. BY COUNTIES.

County.	Number of machines in use.		Average number of tons cut per machine per year.		Average number of tons cut per machine per day.	
	1915	1916	1915	1916	1915	1916
Athens	169	186	14,381	19,192	141.0	126.3
Belmont	334	458	13,002	22,819	117.1	111.9
Carroll	20	19	13,327	13,959	59.8	59.4
Columbiana	26	21	18,363	21,589	89.6	82.4
Coshocton	19	22	5,720	6,757	39.4	38.6
Gallia	....	1	....	1,050	....	....
Guernsey	135	138	23,956	31,613	147.0	148.4
Harrison	39	42	7,113	21,339	87.8	112.9
Hocking	65	62	20,199	21,450	118.8	105.7
Jackson	42	43	7,900	9,007	64.8	43.9
Jefferson	216	234	14,547	20,323	99.0	95.0
Lawrence	....	1	....	845	....	11.6
Mahoning	1	2	2,500	4,164	13.9	17.4
Meigs	85	81	10,945	12,342	51.1	57.4
Morgan	15	10	6,945	25,763	95.1	109.2
Muskingum	32	29	10,323	10,339	51.6	49.7
Noble	20	23	29,603	37,162	170.1	171.3
Perry	95	93	10,801	11,377	84.4	74.4
Portage	2	2	11,177	19,212	66.1	94.2
Stark	14	20	10,067	9,522	78.0	63.9
Tuscarawas	99	98	9,727	11,549	47.0	52.7
Vinton	7	9	12,535	9,617	45.5	62.9
Wayne	8	6	5,882	5,341	37.9	27.7
State	1,443	1,600	13,978	19,737	102.0	100.2

TABLE 7—MINING MACHINES IN USE, AND AVERAGE NUMBER OF TONS OF COAL CUT PER MACHINE PER YEAR AND PER DAY, 1904 TO 1916, INCLUSIVE.

Year.	Total Number of Mining Machines in Use.	Average Number of Tons Cut per Year.	Average Number of Tons Cut per Day.
1904	975	16,971	99.2
1905	1,146	16,588	95.9
1906	1,266	16,361	94.6
1907	1,396	18,520	89.9
1908	1,445	14,956	95.3
1909	1,395	16,593	97.0
1910	1,473	20,423	101.6
1911	1,542	17,429	100.2
1912	1,549	19,803	100.0
1913	1,653	19,718	96.7
1914	1,610	9,943	98.4
1915	1,443	13,978	102.0
1916	1,600	19,737	100.2

TABLE 8—COAL MINES CLASSIFIED BY KIND OF HAULAGE, FOR THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

(Ten stripping mines are not included in this table.)

County.	Total Number of Mines in Operation.	Number of Mines Having Each Specified Kind of Haulage.						
		Motor.	Cable.	Animal.	Hand.	Motor and Animal.	Cable and Animal.	Motor and Cable.
Athens	66	11	....	30	1	21	1	2
Belmont	111	27	....	34	18	31	1	....
Carroll	16	2	....	12	1	....	1	....
Columbiana	24	1	....	12	4	3	3	1
Coshocton	41	2	2	31	3	2	1	....
Gallia	21	....	....	4	17	....	....	....
Guernsey	44	10	1	13	9	8	2	1
Harrison	44	1	1	6	32	4	....	....
Hocking	40	6	....	27	1	5	....	1
Holmes	17	....	1	2	14	....	....	....
Jackson	65	3	1	44	10	5	2	....
Jefferson	66	16	1	19	15	15	....	....
Lawrence	31	....	....	11	19	1	....	....
Mahoning	13	2	2	9	....	....	....	....
Medina	4	....	....	4	....	....	....	....
Meigs	29	7	....	14	2	6	....	....
Monroe	2	....	....	....	2	....	....	....
Morgan	3	2	....	....	1	....	....	....
Muskingum	44	3	2	22	14	1	1	1
Noble	22	2	....	5	14	1	....	....
Perry	58	9	1	31	8	8	....	1
Portage	2	....	....	1	....	1	....	....
Scioto	1	....	....	1	....	....	....	....
Stark	58	....	2	36	19	1	....	....
Summit	2	....	....	....	1	1	....	....
Trumbull	2	....	....	1	1	....	....	....
Tuscarawas	83	4	1	55	8	10	4	1
Vinton	12	....	....	9	1	2	....	....
Washington	3	....	....	....	3	....	....	....
Wayne	4	....	....	3	1	....	....	....
State	928	108	15	436	219	126	16	8

TABLE 9—NUMBER OF HAULAGE MOTORS IN USE. 1916 COMPARED WITH 1915. BY COUNTIES.

County.	1915.	1916.
Athens	68	77
Belmont	128	181
Carroll	9	9
Columbiana	11	12
Coshocton	9	11
Guernsey	85	88
Harrison	11	13
Hocking	34	19
Jackson	17	16
Jefferson	85	93
Lawrence	..	1
Mahoning	..	1
Meigs	22	29
Morgan	8	5
Muskingum	10	10
Noble	5	9
Perry	32	35
Portage	1	1
Stark	3	5
Summit	1	1
Tuscarawas	27	31
Vinton	4	2
State	570	649

TABLE 10—COAL MINES CLASSIFIED BY CHARACTER OF OPENINGS FOR THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

(Ten stripping mines and eight mines for which kind of opening was not reported are not included in this table.)

County.	Total Number of Mines in Operation.	Number of Mines Having Each Specified Kind of Opening.			
		Drift.	Slope.	Shaft.	Two or more of Preceding Types.
Athens	66	44	7	14	1
Belmont	109	87	17	5	...
Carroll	16	11	3	...	2
Columbiana	24	18	2	3	1
Coshocton	41	35	6	...	...
Gallia	21	19	2	...	...
Guernsey	42	16	10	16	...
Harrison	43	34	7	1	1
Hocking	40	37	3	...	...
Holmes	17	14	2	...	1
Jackson	65	41	7	17	...
Jefferson	66	51	6	9	...
Lawrence	30	27	3	...	...
Mahoning	13	2	5	4	2
Medina	4	...	4	...	...
Meigs	29	24	2	1	2
Monroe	2	1	1	...	...
Morgan	3	2	1	...	...
Muskingum	44	33	11	...	...
Noble	22	18	1	3	...
Perry	57	44	8	3	2
Portage	2	...	...	2	...
Scioto	1	1	...	...	...
Stark	57	35	13	8	1
Summit	2	...	...	2	...
Trumbull	2	...	1	1	...
Tuscarawas	83	69	11	3	...
Vinton	12	10	1	1	...
Washington	3	3	...	...	...
Wayne	4	...	...	4	...
State	920	676	134	97	13

TABLE 11—COAL MINES CLASSIFIED BY KIND OF VENTILATION, FOR THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

(Ten stripping mines and eight mines for which kind of ventilation was not reported are not included in this table.)

County.	Total Number of Mines in Operation.	Number of Mines Having Each Specified Kind of Ventilation.					
		Fan.	Furnace.	Fire Basket.	Exhaust Steam.	Natural.	Combination of Two or More of Preceding Methods.
Athens	66	40	3	1	....	18	4
Belmont	110	62	19	2	1	25	1
Carroll	16	8	3	....	....	4	1
Columbiana	24	9	....	1	....	11	3
Coshocton	40	7	15	3	....	15	....
Gallia	21	1	2	....	....	18	....
Guernsey	42	25	1	1	....	15	....
Harrison	43	6	2	1	....	33	1
Hocking	40	16	1	1	....	21	1
Holmes	17	....	3	1	....	12	1
Jackson	65	28	15	3	....	19	....
Jefferson	66	33	13	4	....	15	1
Lawrence	30	1	7	1	....	21	....
Mahoning	13	4	1	....	....	6	2
Medina	4	....	....	....	2	1	1
Meigs	29	12	3	....	....	11	3
Monroe	2	....	1	....	....	1	....
Morgan	3	1	1	....	....	1	....
Muskingum	44	9	8	2	....	25	....
Noble	22	3	2	....	....	17	....
Perry	56	20	3	1	....	29	3
Portage	2	2	....	....	....	....	....
Scioto	1	....	....	....	....	1	....
Stark	58	11	11	2	3	29	2
Summit	2	1	1	....	....	....	....
Trumbull	2	....	....	....	....	2	....
Tuscarawas	83	21	38	4	....	16	4
Vinton	12	3	2	1	1	5	....
Washington	3	....	....	....	....	3	....
Wayne	4	3	....	....	....	1	....
State	920	326	155	29	7	375	28

TABLE 12—AVERAGE NUMBER OF EMPLOYES IN PICK AND MACHINE MINES. 1916 COMPARED WITH 1915. BY COUNTIES.

County.	Pick Mines.		Machine Mines.		Total.		Gain in Total Employes.		Loss in Total Employes.	
	1915.	1916.	1915.	1916.	1915.	1916.	Number.	Per Cent.	Number.	Per Cent.
Athens	130	129	6,576	5,945	6,706	6,074	....	....	632	9.4
Belmont	111	90	8,708	11,200	8,819	11,290	2,471	28.0	....	....
Carroll	71	72	406	341	477	413	....	....	64	13.4
Columbiana	131	157	702	498	833	655	....	....	178	21.4
Coshocton	228	243	294	303	522	546	24	4.6	....	....
Gallia	55	18	....	9	55	27	....	....	28	50.9
Guernsey	40	52	4,196	4,160	4,236	4,212	....	....	24	.6
Harrison	73	53	879	847	952	900	....	....	52	5.5
Hocking	100	101	2,160	1,626	2,260	1,727	....	....	533	23.6
Holmes	46	45	....	....	46	45	....	....	1	2.2
Jackson	634	716	1,014	831	1,648	1,547	....	....	101	6.1
Jefferson	177	170	4,965	5,096	5,142	5,266	124	2.4	....	....
Lawrence	351	323	....	....	351	323	....	....	28	8.0
Mahoning	52	47	11	13	63	60	....	....	3	4.8
Medina	21	21	....	....	21	21	....	....	....	....
Meigs	56	54	1,526	1,621	1,582	1,675	93	5.9	....	....
Monroe	5	5	....	....	5	5	....	....	....	....
Morgan	2	2	352	277	354	279	....	....	75	21.2
Muskingum	139	191	467	409	606	600	....	....	6	1.0
Noble	44	18	787	812	781	830	49	6.3	....	....
Perry	153	112	2,435	2,036	2,585	2,148	....	....	440	17.0
Portage	8	7	135	117	143	124	....	....	19	13.3
Scioto	18	18	....	....	18	18	....	....	....	....
Stark	526	283	341	417	867	700	....	....	167	19.3
Summit	115	71	....	....	115	71	....	....	44	38.3
Trumbull	5	5	....	....	5	5	....	....	....	....
Tuscarawas	517	397	1,358	1,333	1,875	1,730	....	....	145	7.7
Vinton	20	20	141	170	161	190	29	18.0	....	....
Washington	3	1	....	....	3	1	....	....	2	66.7
Wayne	51	90	145	60	196	150	....	....	46	23.5
State	3,882	3,511	37,548	38,121	41,430	41,632	....	....	....	....
Net Gain										
Number	....	....	....	....	....	....	202	....	....	....
Per cent	....	....	....	....	....	....	....	0.5	....	....

TABLE 13—AVERAGE NUMBER AND PER CENT OF EMPLOYES REPORTED ANNUALLY IN PICK AND MACHINE MINES. 1904 TO 1916, INCLUSIVE.

Year.	Average Number of Employes.			Per Cent of Total Employes.	
	In Pick Mines.	In Machine Mines.	Total.	In Pick Mines.	In Machine Mines.
1904	17,723	28,111	45,834	38.7	61.3
1905	14,138	30,055	44,193	32.0	68.0
1906	13,128	33,373	46,501	28.2	71.8
1907	12,927	34,949	47,876	27.0	73.0
1908	11,938	38,330	50,267	23.7	76.3
1909	10,334	36,685	47,019	22.0	78.0
1910	9,607	39,223	48,830	19.7	80.3
1911	7,744	40,633	48,407	16.0	84.0
1912	7,841	39,393	47,234	16.6	83.4
1913	7,303	41,117	48,420	15.1	84.9
1914	5.143	41,822	46,965	11.0	89.0
1915	3,882	37,548	41,430	9.4	90.6
1916	3,511	38,121	41,632	8.4	91.6

TABLE 14—AVERAGE NUMBER OF EMPLOYES IN PICK MINES, BY OCCUPATIONS. 1916 COMPARED WITH 1915. BY COUNTIES.

County.	Pick Miners.		Inside Day Hands.		Outside Day Hands.		Total	
	1915	1916	1915	1916	1915	1916	1915	1916
Athens	114	112	12	13	4	4	130	129
Belmont ...	98	76	9	10	4	4	111	90
Carroll	48	40	18	24	5	8	71	72
Columbiana	104	125	16	20	11	12	131	157
Coshocton .	189	197	28	34	11	12	228	243
Gallia	48	18	6	....	1	....	55	18
Guernsey ..	37	46	3	5	....	1	40	52
Harrison ...	70	53	2	....	1	....	73	53
Hocking ...	91	85	6	11	3	5	100	101
Holmes	45	44	....	1	1	....	46	45
Jackson	457	509	123	140	54	67	634	716
Jefferson ..	154	142	16	20	7	8	177	170
Lawrence ..	270	239	43	57	38	27	351	323
Mahoning ..	43	45	6	2	3	....	52	47
Medina	13	17	6	2	2	2	21	21
Meigs	47	45	6	6	3	3	56	54
Monroe	5	5	....	....	....	....	5	5
Morgan	2	2	....	....	....	....	2	2
Muskingum	124	169	11	14	4	8	139	191
Noble	44	18	....	....	....	....	44	18
Perry	136	95	15	12	2	5	153	112
Portage ...	....	3	4	2	4	2	8	7
Scioto	9	11	5	3	4	4	18	18
Stark	377	203	97	47	52	33	526	283
Summit	79	47	20	12	16	12	115	71
Trumbull ..	4	4	....	....	1	1	5	5
Tuscarawas	404	325	80	51	33	21	517	397
Vinton	19	19	1	1	....	....	20	20
Washington	3	1	....	....	....	....	3	1
Wayne	33	51	8	21	10	18	51	90
State ..	3,067	2,746	541	508	274	257	3,882	3,511

TABLE 15—AVERAGE NUMBER OF EMPLOYES IN MACHINE MINES, BY OCCUPATIONS. 1916 COMPARED WITH 1915. BY COUNTIES.

County.	Machine Runners and Helpers.		Loaders (Including Drillers and Shooters.)		Pick Miners in Machine Mines.		Inside Day Hands.		Outside Day Hands.		Total.	
	1915.	1916.	1915.	1916.	1915.	1916.	1915.	1916.	1915.	1916.	1915.	1916.
Athens	422	375	4,548	3,836	73	78	1,020	1,083	513	573	6,576	5,945
Belmont	747	968	5,757	7,216	37	69	1,459	1,967	706	980	8,706	11,200
Carroll	38	35	249	219	14	......	71	60	34	27	406	341
Columbiana	50	49	480	297	2	1	118	109	52	42	702	498
Coshocton	35	32	128	129	32	41	65	65	34	36	294	303
Gallia	......	2	....	3	......	......	......	1	......	3	....	9
Guernsey	336	321	2,633	2,461	......	10	929	1,028	298	340	4,196	4,160
Harrison	76	84	584	499	7	2	165	175	97	87	879	847
Hocking	141	111	1,365	1,015	87	45	358	270	209	185	2,160	1,626
Jackson	90	72	555	416	61	52	214	193	94	98	1,014	831
Jefferson	406	439	3,143	3,053	34	88	870	1,007	512	509	4,965	5,096
Mahoning	2	2	5	5	1	......	1	3	2	3	11	13
Meigs	198	150	883	933	3	......	293	373	149	165	1,526	1,621
Morgan	38	32	207	164	......	......	68	60	39	21	352	277
Muskingum	54	49	306	255	5	......	64	66	38	39	467	409
Noble	60	62	484	500	......	......	155	196	38	54	737	812
Perry	210	161	1,586	1,201	39	88	380	394	220	242	2,435	2,086
Portage	4	4	41	40	48	30	24	26	18	17	135	117
Stark	44	33	167	196	26	58	59	71	45	59	341	417
Tuscarawas	178	158	753	714	59	40	235	241	133	180	1,358	1,333
Vinton	12	16	87	101	1	......	27	37	14	16	141	170
Wayne	13	6	65	13	16	18	25	13	26	10	145	60
State	3,154	3,161	23,976	23,266	545	570	6,600	7,438	3,273	3,686	37,548	38,121

TABLE 16—AVERAGE NUMBER OF DAYS WORKED PER YEAR BY PICK MINERS IN PICK MINES, AND BY LOADERS (INCLUDING DRILLERS AND SHOOTERS) IN MACHINE MINES. 1916 COMPARED WITH 1915. BY COUNTIES.

(Pick miners employed in machine mines are not included in this table.)

County.	Average Number of Days Worked by			
	Pick Miners in Pick Mines.		Loaders (Including Drillers and Shooters) in Machine Mines.	
	1915.	1916.	1915.	1916.
Athens	163	198	102	152
Belmont	165	169	115	204
Carroll	226	231	223	235
Columbiana	208	195	205	262
Coshocton	149	179	145	175
Gallia	59	105	....	....
Guernsey	123	184	163	213
Harrison	193	179	81	189
Hocking	213	203	170	203
Holmes	217	155	....	....
Jackson	121	149	122	205
Jefferson	217	237	147	214
Lawrence	157	219	....	73
Mahoning	176	178	180	240
Medina	221	281	....	....
Meigs	180	115	204	215
Monroe	112	140	....	....
Morgan	275	300	73	236
Muskingum	181	169	200	208
Noble	159	178	174	217
Perry	181	223	128	153
Portage	....	....	169	204
Scioto	90	49	....	....
Stark	172	167	129	149
Summit	110	126	....	....
Trumbull	160	195	....	....
Tuscarawas	196	202	207	219
Vinton	282	255	214	153
Washington	139	90	....	....
Wayne	151	70	155	....
State	168	182	137	197

TABLE 17—AVERAGE NUMBER OF DAYS WORKED PER YEAR BY PICK MINERS IN PICK MINES, AND BY LOADERS (INCLUDING DRILLERS AND SHOOTERS) IN MACHINE MINES, 1904 TO 1916 INCLUSIVE.

Year.	Pick Miners.	Drillers, Shooters and Loaders.
1904	159	169
1905	169	169
1906	176	173
1907	191	201
1908	160	157
1909	182	172
1910	168	209
1911	168	175
1912	173	199
1913	189	206
1914	150	101
1915	168	137
1916	182	197

TABLE 18—CLASSIFIED AVERAGE NUMBER OF DAYS WORKED BY PICK MINERS IN PICK MINES, AND BY LOADERS (INCLUDING DRILLERS AND SHOOTERS) IN MACHINE MINES, FOR THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

(Pick Miners employed in machine mines are not included in this table.)

County.	Pick Miners in Pick Mines.									Loaders (Including Drillers and Shooters) in Machine Mines.								
	Number Reported.	Average Number of Days Worked.	Number Working Each Classified Number of Days.							Number Reported.	Average Number of Days Worked.	Number Working Each Classified Number of Days.						
			Less than 50.	50 but under 100.	100 but under 150.	150 but under 200.	200 but under 250.	250 but under 300.	300 or more.			Less than 50.	50 but under 100.	100 but under 150.	150 but under 200.	200 but under 250.	250 but under 300.	300 or more.
Athens	104	198	......	2	10	87	24	31	......	3,583	152	29	534	1,052	1,226	742	......	......
Belmont	62	169	15	......	9	12	8	15	3	7,196	204	......	122	786	2,138	3,813	656	151
Carroll	22	231	......	2	2	2	7	4	5	217	235	......	......	......	......	168	54	......
Columbiana	115	195	30	......	3	6	17	51	8	297	262	......	......	......	......	92	205	......
Coshocton	194	179	7	26	52	19	84	56	......	129	175	......	......	22	80	27	......	......
Gallia	19	105	5	4	4	3	3	......	......	......	......	......	......	......	......	......	......	......
Guernsey	87	184	2	3	9	6	3	14	......	2,461	218	......	6	6	688	1,816	......	......
Harrison	46	179	......	3	9	15	9	7	3	499	189	......	......	......	408	91	......	......
Hocking	82	203	19	4	9	......	3	9	38	1,015	208	16	77	20	235	667	......	......
Holmes	34	155	......	11	9	3	2	4	5	......	......	......	......	......	......	......	......	......
Jackson	518	149	74	119	28	157	77	29	34	414	205	......	24	......	91	169	130	......
Jefferson	131	237	1	3	7	18	55	32	20	3,053	214	82	......	......	1,095	1,471	207	198
Lawrence	241	219	4	14	24	25	124	41	9	2	73	......	2	......	......	......	......	......
Mahoning	47	178	......	10	17	......	5	6	9	5	240	......	......	......	......	5	......	......
Medina	17	281	......	......	......	......	......	17	......	......	......	......	......	......	......	......	......	......
Meigs	44	115	16	5	2	18	......	3	......	983	215	......	28	......	290	359	256	......
Monroe	5	140	......	......	5	......	......	......	......	......	......	......	......	......	......	......	......	......
Morgan	2	300	......	......	......	......	......	......	2	164	236	......	......	......	......	164	......	......
Muskingum	156	169	22	84	8	27	7	55	8	255	208	8	12	4	70	64	97	......
Noble	14	178	......	4	......	4	4	......	2	500	217	......	60	......	......	440	......	......
Perry	90	223	5	4	4	11	31	31	4	1,201	153	130	52	411	240	352	8	8
Portage	......	......	......	......	......	......	......	......	......	40	204	......	......	......	......	40	......	......
Scioto	11	49	11	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Stark	180	167	82	28	5	85	38	30	12	190	149	......	49	76	53	5	......	7
Summit	47	126	......	......	41	......	......	6	......	......	......	......	......	......	......	......	......	......
Trumbull	4	195	......	......	......	2	2	......	......	......	......	......	......	......	......	......	......	......
Tuscarawas	314	202	16	43	18	46	69	83	39	714	219	24	16	......	104	357	208	5
Vinton	21	255	......	......	......	3	9	2	7	101	153	......	......	16	65	20	......	......
Washington	1	90	......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Wayne	24	70	......	24	......	......	......	......	......	......	......	......	......	......	......	......	......	......
State	2,582	182	259	344	270	444	531	526	208	(a)22,969	197	289	982	2,398	6,728	10,887	1,821	369

(a) 297 Loaders (Including Drillers and Shooters) are not carried in this table, because of incomplete data.

TABLE 19—FLUCTUATION IN NUMBER OF EMPLOYES IN COAL MINES DURING THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

(The employes of 186 mines, comprising those which reported incomplete data and those in which the owners did their own work, are not included in this table.)

County.	Number of Mines Reporting.	Number of Employes for the Payroll Nearest the 15th of												Variation from Maximum.	
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Number.	Percent.
Athens	63	3,791	3,907	3,938	2,121	3,468	4,055	4,933	5,217	5,706	5,749	5,810	5,886	3,765	64.0
Belmont	88	10,030	10,515	10,575	9,810	10,459	11,080	11,640	11,447	11,420	11,210	11,130	10,954	1,830	15.7
Carroll	8	395	392	391	368	226	384	383	396	383	401	399	398	175	43.6
Columbiana	21	634	637	635	598	584	574	565	585	589	608	636	668	103	15.4
Coshocton	36	545	558	538	472	434	409	404	439	356	447	520	530	202	36.2
Gallia	9	10	11	10	16	12	16	10	15	16	16	17	15	7	41.2
Guernsey	33	4,091	4,123	4,140	3,937	3,977	4,184	4,178	4,219	4,144	4,275	4,157	4,115	338	7.9
Harrison	27	1,010	1,007	999	884	947	906	917	869	865	876	899	940	145	14.4
Hocking	35	1,468	1,492	1,488	472	1,459	1,480	1,487	1,650	1,704	1,744	1,769	1,756	1,297	73.3
Holmes	14	35	35	27	12	10	7	9	14	32	36	40	46	39	84.8
Jackson	60	1,500	1,462	1,432	924	965	941	1,044	1,299	1,422	1,497	1,545	1,571	647	41.2
Jefferson	61	5,314	5,238	5,288	4,686	4,562	4,806	4,881	4,953	4,850	4,887	4,929	5,065	752	14.2
Lawrence	25	325	340	329	245	248	234	232	243	251	287	350	345	118	33.7
Mahoning	9	53	52	48	35	16	15	16	28	42	61	68	74	59	79.7
Medina	3	18	18	17	13	12	13	18	14	18	22	27	29	17	58.6
Meigs	23	1,484	1,534	1,500	885	950	1,492	1,541	1,567	1,604	1,611	1,669	1,589	784	47.0
Monroe	1	5	5	5	......	....	6	7	5	7	4	4	5	7	100.0
Morgan	3	258	270	291	297	300	299	286	299	296	296	295	300	42	14.0
Muskingum	27	547	544	536	379	338	331	427	465	496	521	528	546	216	39.5
Noble	15	692	702	700	705	780	816	815	824	842	850	856	826	164	19.2
Perry	49	1,321	1,334	1,253	818	810	1,321	1,546	1,609	1,687	1,763	1,962	2,120	1,310	61.8
Portage	2	150	144	139	25	110	110	100	111	124	125	131	132	125	83.3
Scioto	1	16	10	11	9	....	....	....	....	....	....	....	....	16	100.0
Stark	49	619	596	531	456	485	262	267	415	566	603	674	685	423	61.8
Summit	2	74	72	65	14	12	12	12	15	18	67	76	76	64	84.2
Trumbull	2	5	5	5	5	3	3	3	3	3	4	5	6	3	50.0
Tuscarawas	72	1,650	1,644	1,632	1,449	1,508	1,489	1,390	1,413	1,457	1,655	1,709	1,743	353	20.3
Vinton	9	157	164	173	35	65	52	83	184	197	213	202	198	178	83.6
Washington	2	1	1	1	1	....	....	....	....	....	1	1	2	2	100.0
Wayne	3	155	168	158	121	99	81	112	101	122	108	133	134	87	51.8
Total	752	36,348	36,980	36,855	29,792	32,839	35,378	37,296	38,399	39,217	39,937	40,541	40,754	10,962	26.9

TABLE 20—AVERAGE NUMBER OF TONS OF COAL PRODUCED PER YEAR AND PER DAY, PER EMPLOYE IN CERTAIN SPECIFIED OCCUPATIONS. 1916 COMPARED WITH 1915. BY COUNTIES.

(Pick miners employed in machine mines are not included in this table.)

County.	Pick Mines.				Machine Mines.							
	Pick Miners.				Runners and Helpers.				Loaders (Including Drillers and Shooters.)			
	Average Number of Tons Mined Per Year.		Average Number of Tons Mined Per Day.		Average Number of Tons Cut Per Year.		*a* Average Number of Tons Cut Per Day.		Average Number of Tons Loaded Per Year.		Average Number of Tons Loaded Per Day.	
	1915	1916	1915	1916	1915	1916	1915	1916	1915	1916	1915	1916
Athens	715	980	4.4	4.9	5,736	9,180	56.2	60.4	534	930	5.2	6.1
Belmont	458	467	2.8	2.8	5,814	10,800	50.6	52.9	754	1,452	6.6	7.1
Carroll	759	1,036	3.4	4.8	7,014	7,578	31.5	32.2	1,070	1,222	4.8	5.2
Columbiana	635	542	3.1	2.8	9,549	9,445	46.6	36.0	995	1,526	4.9	5.8
Coshocton	563	617	3.8	3.4	3,105	4,645	21.4	26.5	849	1,152	5.9	6.6
Gallia	130	190	2.2	1.8	......	......	......	......	......	......	......	......
Guernsey	340	532	2.8	2.9	9,625	13,479	59.0	63.6	1,228	1,758	7.5	8.3
Harrison	371	390	1.9	2.2	3,650	10,669	45.1	56.4	519	1,796	6.4	9.5
Hocking	754	838	3.7	4.1	9,312	11,399	54.8	56.2	962	1,269	5.7	6.3
Holmes	361	335	1.7	2.2	......	......	......	......	......	......	......	......
Jackson	457	568	3.8	3.8	3,687	5,668	30.2	27.6	610	931	5.0	4.5
Jefferson	705	791	3.2	3.3	7,739	11,034	52.6	51.6	1,000	1,558	6.8	7.3
Lawrence	484	655	3.1	3.0	......	......	......	......	......	423	......	5.8
Mahoning	480	414	2.7	2.3	1,250	3,664	6.9	15.3	500	1,465	2.8	6.1
Medina	594	524	2.7	1.9	......	......	......	......	......	......	......	......

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a The tonnage per day is computed for machine runners and helpers on the assumption that they worked the same number of days as did the loaders in their respective mines.

TABLE 20—AVERAGE NUMBER OF TONS OF COAL, PRODUCED PER YEAR AND PER DAY, PER EMPLOYE IN CERTAIN SPECIFIED OCCUPATIONS. 1916 COMPARED WITH 1915. BY COUNTIES—Concluded.

County.	Pick Mines.				Machine Mines.							
	Pick Miners.				Runners and Helpers.				Loaders (Including Drillers and Shooters.)			
	Average Number of Tons Mined Per Year.		Average Number of Tons Mined Per Day.		Average Number of Tons Cut Per Year.		[a] Average Number of Tons Cut Per Day.		Average Number of Tons Loaded Per Year.		Average Number of Tons Loaded Per Day.	
	1915	1916	1915	1916	1915	1916	1915	1916	1915	1916	1915	1916
Meigs	403	487	2.2	4.2	4,699	6,571	23.0	30.6	1,054	1,071	5.2	5.0
Monroe	109	182	1.0	1.3	......	......	......	......	......	......	......	......
Morgan	550	545	2.0	1.8	2,741	10,887	37.5	46.1	503	1,567	6.9	6.6
Muskingum	472	556	2.6	3.3	6,118	6,246	30.6	30.0	1,080	1,176	5.4	5.7
Noble	343	374	2.2	2.1	9,868	13,786	56.7	63.5	1,223	1,709	7.0	7.9
Perry	788	951	4.4	4.3	4,886	6,515	38.2	42.6	647	881	5.1	5.8
Portage	......	......	......	......	5,589	9,606	33.1	47.1	545	961	3.2	4.7
Scioto	271	56	3.0	1.1	......	......	......	......	......	......	......	......
Stark	584	556	3.4	3.3	3,203	4,893	24.8	32.8	844	850	6.5	5.7
Summit	651	814	5.9	6.5	......	......	......	......	......	......	......	......
Trumbull	246	279	1.5	1.4	......	......	......	......	......	......	......	......
Tuscarawas	901	920	4.6	4.6	5,410	7,061	26.1	32.2	1,279	1,562	6.2	7.1
Vinton	916	919	3.2	3.6	7,312	5,410	34.2	35.4	1,009	857	4.7	5.6
Washington	150	160	1.1	1.8	......	......	......	......	......	......	......	......
Wayne	454	356	3.0	5.1	3,619	3,540	23.3	28.1	724	......	4.7	......
State	591	659	3.5	3.6	6,395	9,966	46.7	50.6	841	1,359	6.1	6.9

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[a] The tonnage per day is computed for machine runners and helpers on the assumption that thev worked the same number of days as did the loaders in their respective mines.

TABLE 21—AVERAGE NUMBER OF TONS OF COAL PRODUCED PER YEAR AND PER DAY, PER EMPLOYE IN CERTAIN SPECIFIED OCCUPATIONS, 1895 TO 1916 INCLUSIVE.

Year.	Pick Mines.		Machine Mines.			
	Pick Miners.		Machine Runners and Helpers.		Loaders (Including Drillers and Shooters).	
	Average Number of Tons Mined Per Year.	Average Number of Tons Mined Per Day.	Average Number of Tons Cut Per Year	Average Number of Tons Cut Per Day.	Average Number of Tons Loaded Per Year.	Average Number of Tons Loaded Per Day.
1895	568	3.4	6,981	44.7	925	5.9
1896	431	2.9	5,817	40.4	775	5.4
1897	509	3.4	5,610	41.6	821	6.1
1898	546	3.6	6,524	38.2	892	5.2
1899	443	2.9	8,016	43.6	1,070	6.3
1900	411	2.4	8,467	47.4	1,128	6.3
1901	395	2.2	6,247	34.3	1,155	6.4
1902	380	2.2	9,478	49.9	1,212	6.4
1903	640	3.6	7,471	39.3	1,027	5.4
1904	602	3.8	7,204	42.0	684	4.0
1905	653	3.9	7,255	41.8	686	4.0
1906	661	3.8	7,155	41.4	991	5.7
1907	676	3.5	8,725	42.4	1,187	5.8
1908	518	3.2	6,823	43.5	869	5.5
1909	595	3.3	7,327	42.8	972	5.7
1910	602	3.6	9,136	45.5	1,195	5.7
1911	597	3.6	7,904	45.4	1,015	5.8
1912	641	3.7	8,840	44.6	1,218	6.1
1913	681	3.6	8,690	42.6	1,260	6.1
1914	508	3.3	[a]4,564	[a]45.2	622	6.1
1915	591	3.5	[a]6,395	[a]46.7	841	6.1
1916	659	3.6	[a]9,966	[a]50.6	1,359	6.9

[a] The tonnage per day for 1914, 1915 and 1916 for machine runners and helpers is computed on the assumption that they worked the same number of days as did the loaders in their respective mines.

TABLE 22—AVERAGE WAGES PER DAY OF EMPLOYES IN COAL MINES DURING THE YEAR ENDING DECEMBER 31, 1916. BY OCCUPATIONS AND BY COUNTIES.

County.	Total Number of Employes.	Pick Miners (a).		Machine Runners and Helpers.		Loaders (Including Drillers and Shooters.		Track Layers.		Track Layers' Helpers.		Trappers.		Bottom Cagers.	
		Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.
Athens	6,074	190	$3 15	375	$4 86	3,836	$3 11	77	$2 98	44	$2 87	139	$1 42	45	$2 97
Belmont	11,290	145	3 19	968	4 48	7,216	3 24	158	2 97	78	2 78	136	1 38	21	2 89
Carroll	413	40	2 89	35	5 04	219	3 01	14	2 93	6	2 73	....	....	....	....
Columbiana	655	126	2 88	49	3 88	297	3 41	20	2 91	3	2 78	11	1 36	4	2 98
Coshocton	546	288	3 04	32	3 88	129	3 35	12	2 97	7	2 75	1	1 42	....	....
Gallia	27	18	1 80	2	2 50	3	2 25	....	....	....	....	....	....	....	....
Guernsey	4,212	56	2 57	321	4 54	2,461	3 68	69	2 95	45	2 73	77	1 48	43	2 97
Harrison	900	55	2 25	84	4 82	499	3 52	11	2 97	7	2 74	16	1 30	2	2 98
Hocking	1,727	180	3 43	111	4 36	1,015	2 92	30	2 96	6	2 86	29	1 42	1	2 98
Holmes	45	44	2 39	....	....	....	....	....	....	....	....	....	....	....	....
Jackson	1,547	561	3 06	72	3 51	416	2 64	24	2 65	2	2 45	87	1 20	14	2 45
Jefferson	5,266	280	3 19	489	4 62	3,053	3 41	93	2 92	43	2 77	102	1 34	18	3 01
Lawrence	823	289	2 35	....	....	....	....	4	2 57	1	2 40	5	1 17	....	....
Mahoning	60	45	2 62	2	3 66	5	5 00	2	2 99	....	....	....	....	....	....
Medina	21	17	3 21	....	....	....	....	....	....	....	....	....	....	....	....
Meigs	1,675	45	2 77	150	4 00	988	2 92	24	2 70	23	2 46	45	1 26	6	2 40
Monroe	5	5	1 75	....	....	....	....	....	....	....	....	....	....	....	....
Morgan	279	2	2 00	32	5 40	164	3 65	4	2 98	4	2 75	15	1.42	1	2 98
Muskingum	600	169	2 93	49	3 82	255	3 07	11	2 95	3	2 90	6	1 64	....	....
Noble	830	18	2 07	62	4 18	500	3 17	8	2 98	8	2 75	26	1 48	9	2 98
Perry	2,148	133	3 41	161	3 87	1,201	2 93	35	2 81	16	2 82	41	1 41	13	2 99
Portage	124	83	3 27	4	3 70	40	3 27	2	2 91	8	2 91	1	1 37	2	2 91
Scioto	18	11	1 95	....	....	....	....	1	1 50	....	....	....	....	....	....
Stark	700	261	3 83	83	3 57	196	4 55	15	3 14	....	....	8	1 36	5	2 98
Summit	71	47	4 59	....	....	....	....	2	2 98	....	....	2	1 36	1	2 98
Trumbull	5	4	3 50	....	....	....	....	....	....	....	....	....	....	....	....
Tuscarawas	1,730	365	3 32	158	4 18	714	3 37	29	2 96	19	2 67	21	1 49	5	2 94
Vinton	190	19	2 78	16	2 69	101	2 95	4	2 76	3	2 40	4	1 23	1	2 40
Washington	1	1	2 50	....	....	....	....	....	....	....	....	....	....	....	....
Wayne	150	69	5 08	6	3 74	13	7 77	4	2 95	....	....	6	1 35	3	2 98
State	41,682	3,316	$3 10	3,161	$4 42	23,266	$3 26	658	$2 93	321	$2 75	728	$1 38	180	$2 90

(a) This table includes pick miners in both pick mines and machine mines.

TABLE 22—AVERAGE WAGES PER DAY OF EMPLOYES IN COAL MINES DURING THE YEAR ENDING DECEMBER 31, 1916. BY OCCUPATIONS AND BY COUNTIES—Continued.

County.	Drivers.		Snappers.		Trip Roperiders.		Water Haulers.		Machine Haulers.		Timbermen.		Pumpers.	
	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.
Athens	304	$2 95	7	$2 89	4	$2 98	9	$2 98	10	$2 98	76	$2 98	56	$2 82
Belmont	518	2 97	8	2 98	24	2 97	31	2 98	8	2 98	225	2 97	23	2 82
Carroll	13	2 49	....	....	3	2 98	....	....	....	....	7	2 75	5	2 84
Columbiana	42	2 96	....	....	3	2 99	1	2 98	....	....	5	2 98	2	2 98
Coshocton	37	2 62	....	....	3	2 98	....	....	....	....	1	2 98	6	2 75
Gallia	1	1 50	....	....	....	....	....	....	....	....	....	....	....	....
Guernsey	229	2 96	12	2 88	9	2 98	12	2 98	10	2 98	112	2 95	37	2 85
Harrison	39	2 97	....	....	3	2 98	4	2 97	3	2 75	13	2 94	7	2 77
Hocking	102	2 96	2	2 98	4	2 98	4	2 79	1	2 98	24	2 98	13	2 86
Holmes	1	1 00	....	....	....	....	....	....	....	....	....	....	....	....
Jackson	136	2 41	....	....	4	2 43	5	2 70	....	....	5	2 52	7	2 39
Jefferson	264	2 96	11	2 90	10	2 75	23	2 97	3	2 98	104	2 95	42	2 75
Lawrence	26	2 34	6	2 40	....	....	1	2 15	....	....	5	2 27	1	2 00
Mahoning	3	2 99	....	....	....	....	....	....	....	....	....	....	....	....
Medina	2	2 94	....	....	....	....	....	....	....	....	....	....	....	....
Meigs	110	2 39	9	2 67	....	....	7	2 70	2	2 40	27	2 70	13	2 65
Monroe	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Morgan	17	2 98	....	....	....	....	1	2 98	1	2 98	....	....	2	2 98
Muskingum	27	2 90	....	....	2	2 91	1	2 98	1	2 98	....	....	2	2 89
Noble	47	2 98	2	2 98	....	....	4	2 98	2	2 98	24	2 98	3	2 83
Perry	108	3 02	3	2 98	9	2 86	4	2 95	6	2 98	27	2 98	18	2 67
Portage	10	2 91	....	....	1	2 91	....	....	....	....	....	....	1	2 91
Scioto	2	1 65	....	....	....	....	....	....	....	....	....	....	....	....
Stark	62	2 89	2	2 60	....	....	....	....	....	....	7	2 99	5	2 67
Summit	4	2 98	....	....	....	....	....	....	....	....	....	....	....	....
Trumbull	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tuscarawas	111	2 96	....	....	10	2 98	3	2 98	....	....	14	2 95	12	2 93
Vinton	18	2 40	....	....	1	2 41	1	2 71	....	....	....	....	1	2 40
Washington	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wayne	12	292	....	....	....	....	....	....	....	....	3	2 93	3	2 86
State	2,245	$2 88	62	$2 82	90	$2 91	111	$2 93	47	$2 94	679	$2 93	259	$2 78

TABLE 22—AVERAGE WAGES PER DAY OF EMPLOYES IN COAL MINES DURING THE YEAR ENDING DECEMBER 31, 1916. BY OCCUPATIONS AND BY COUNTIES—Continued.

County.	Pipemen.		Electricians.		Electricians' Helpers.		Motormen.		Motormens' Helpers.		Other Inside Day Labor.		Engineers.	
	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.
Athens	8	$2 98	27	$3 41	22	$2 99	76	$2 98	60	$2 98	182	$2 75	44	$3 05
Belmont	1	2 98	58	3 46	35	3 00	180	2 99	110	2 98	368	2 86	77	2 97
Carroll			2	4 50	1	2 98	20	2 98	4	2 98	9	2 68	3	3 31
Columbiana			3	3 27	2	2 98	9	3 00	4	2 87	20	2 81	11	2 97
Coshocton			2	3 50	1	2 98	9	2 98	10	2 98	10	2 78	6	3 22
Gallia													1	2 00
Guernsey			24	3 17	25	2 92	88	2 96	69	2 91	172	2 81	33	2 99
Harrison			5	3 63			19	2 98	3	2 97	43	2 72	11	3 34
Hocking			7	3 32	5	2 98	18	3 04	9	2 88	26	2 84	17	2 88
Holmes														
Jackson			7	3 13	3	2 70	16	2 72	8	2 40	65	2 48	25	2 67
Jefferson	3	2 75	26	3 50	14	2 85	84	2 97	36	2 92	156	2 91	47	3 09
Lawrence							1	4 00	1	2 40	6	2 40	2	2 52
Mahoning													1	2 98
Medina													1	3 00
Meigs			9	3 61	4	2 55	32	2 70	14	2 40	54	2 40	16	2 57
Monroe														
Morgan			2	3 27	1	3 33	5	2 95	2	2 98	5	2 75	3	2 91
Muskingum			3	3 53			10	2 96	7	2 95	7	2 75	6	2 89
Noble			3	3 38	5	2 98	9	3 06	7	2 98	89	2 81	7	2 88
Perry	5	2 82	14	3 15	13	3 00	39	3 02	18	2 85	51	2 76	17	3 08
Portage			2	3 79			1	3 16					4	3 16
Scioto														
Stark			1	3 50							13	2 80	23	2 81
Summit			1	4 00			1	2 98			1	2 98	3	2 82
Trumbull														
Tuscarawas	2	2 94	11	3 81	5	2 98	24	2 99	10	2 92	16	2 93	22	3 42
Vinton			2	2 73			2	2 71	1	2 41			3	2 72
Washington														
Wayne											8	2 72	7	2 68
State	19	$2 90	209	$3 42	136	$2 95	634	$2 96	368	$2 90	1,196	$2 78	390	$2 99

TABLE 22—AVERAGE WAGES PER DAY OF EMPLOYES IN COAL MINES DURING THE YEAR ENDING DECEMBER 31, 1916. BY OCCUPATIONS AND BY COUNTIES—Continued.

County.	Firemen.		Dynamo Men.		First Blacksmith.		Second Blacksmith.		Helpers. Blacksmiths'		Carpenters.		Dumpers.	
	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.
Athens	50	$2 74	13	$2 74	28	$3 32	12	$2 98	4	$2 83	38	$2 80	49	$2 78
Belmont	51	2 55	14	3 87	64	3 30	33	2 99	10	2 74	79	2 79	68	2 53
Carroll	2	2 75			5	2 98			1	2 75	2	2 98	9	2 48
Columbiana	3	2 75			8	3 00	3	3 09	1	2 75			12	2 63
Coshocton	2	2 22			5	3 25	1	2 98			2	2 61	7	2 54
Gallia											1	2 00	1	1 50
Guernsey	53	2 76	1	2 81	21	3 34	10	2 90			21	2 98	20	2 76
Harrison	3	2 28			6	3 24	2	2 87	2	2 84	4	2 65	7	2 57
Hocking	8	2 67	1	3 40	9	3 29	1	2 95	1	2 98	7	2 95	30	2 78
Holmes														
Jackson	18	2 45			18	2 96					2	2 74	29	2 27
Jefferson	29	2 64	2	2 60	29	3 23	11	2 94			37	2 82	55	2 46
Lawrence					4	2 60			1	1 75			7	2 38
Mahoning													2	2 50
Medina													1	2 38
Meigs	6	2 63	3	1 94	15	2 79	5	2 53	1	2 25	8	2 56	12	2 48
Monroe														
Morgan	1	2 75	1	2 94	1	3 40	3	3 15			2	2 98	1	2 98
Muskingum					6	3 16	2	2 98			3	2 79	12	2 64
Noble	7	2 76			3	3 41	3	2 95			5	2 95	4	2 75
Perry	16	2 75	1	3 06	18	3 14	8	3 00	2	2 54	13	3 04	27	2 79
Portage	2	2 28			1	3 41			1	2 88			1	2 31
Scioto					1	2 00							2	1 50
Stark	2	2 33			8	3 14	2	3 20			4	3 37	20	2 48
Summit	1	2 50			1	3 75							2	2 33
Trumbull														
Tuscarawas	12	2 79	3	3 42	22	3 33	10	3 21	6	2 99	7	2 79	37	2 48
Vinton	1	2 40			2	2 25					1	2 50	3	2 43
Washington														
Wayne	3	2 33			3	2 87					1	3 00	6	2 29
State	265	$2 66	39	$2 98	273	$3 20	106	$2 99	30	$2 76	237	$2 83	424	$2 56

TABLE 22—AVERAGE WAGES PER DAY OF EMPLOYES IN COAL MINES DURING THE YEAR ENDING DECEMBER 31, 1916. BY OCCUPATIONS AND BY COUNTIES—Concluded.

County.	Trimmers.		Greasers.		Couplers.		Stable Boss.		Other Outside Help.	
	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.	Number Reported.	Average Daily Wage.
Athens	155	$2 76	17	$2 06	25	$2 15	24	$2 24	118	$2 73
Belmont	158	2 36	37	1 81	68	2 08	40	2 55	290	2 41
Carroll	4	2 87	2	2 50	1	2 75	1	1 40	5	2 59
Columbiana	5	2 62	1	2 29	2	2 75	3	2 22	5	2 45
Coshocton	9	2 66	1	2 00	4	2 33	....	....	11	2 51
Gallia	....	....	....	....	....	....	....	....	....	....
Guernsey	74	2 72	12	2 10	14	2 43	16	2 12	66	2 72
Harrison	7	2 20	2	1 91	7	2 82	4	2 10	32	2 23
Hocking	53	2 73	5	1 73	10	1 79	6	1 93	42	2 90
Holmes	....	....	....	....	....	....	....	....	....	....
Jackson	81	2 40	9	1 78	3	2 40	7	1 96	83	2 19
Jefferson	62	2 43	20	2 04	30	2 12	24	2 33	171	2 40
Lawrence	5	2 35	....	....	....	....	4	2 10	4	2 40
Mahoning	....	....	....	....	....	....	....	....	....	....
Medina	....	....	....	....	....	....	....	....	....	....
Meigs	31	2 38	8	1 80	11	1 68	9	2 00	43	2 15
Monroe	....	....	....	....	....	....	....	....	....	....
Morgan	1	2 62	1	2 62	4	2 62	1	3 00	2	2 00
Muskingum	9	2 41	....	....	1	2 75	2	1 88	6	2 42
Noble	11	2 75	3	2 53	8	2 75	3	2 54	5	2 75
Perry	47	2 77	4	2 44	8	2 17	8	2 32	78	2 73
Portage	1	2 31	....	....	....	....	1	2 00	8	2 42
Scioto	1	1 75	....	....	....	....	....	....	....	....
Stark	13	2 27	....	....	....	....	....	....	20	2 64
Summit	2	2 33	....	....	....	....	....	....	3	2 83
Trumbull	....	....	....	....	....	....	....	....	1	1 50
Tuscarawas	34	2 39	10	2 26	5	2 36	8	2 13	25	2 29
Vinton	8	2 41	1	2 41	....	....	1	2 00	1	2 40
Washington	....	....	....	....	....	....	....	....	....	....
Wayne	6	2 29	....	....	....	....	....	....	2	2 28
State	722	$2 56	133	$1 99	191	$2 15	162	$2 27	971	$2 50

TABLE 23—TOTAL WAGE AND SALARY PAYMENTS MADE BY COAL MINES DURING THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

(The wages of the employes of 149 mines comprising those which reported incomplete data and those in which the owners did their own work are not included in this table.)

County.	Total Number of Mines Reporting.	Aggregate Wage and Salary Payments.		
		To Wage Earners.	To Office Help.	Total.
Athens	59	$3,034,840	$29,713	$3,064,553
Belmont	98	7,824,744	74,222	7,898,966
Carroll	13	294,256	300	294,556
Columbiana	21	462,369	10,000	472,369
Coshocton	37	313,933	7,112	321,045
Gallia	8	4,009	598	4,607
Guernsey	38	3,516,834	37,659	3,554,493
Harrison	32	698,831	4,633	703,464
Hocking	34	1,069,014	6,991	1,076,005
Holmes	15	14,143	....	14,143
Jackson	61	798,894	17,088	815,982
Jefferson	66	4,077,649	62,037	4,139,686
Lawrence	25	150,692	5,568	156,260
Mahoning	11	29,870	....	29,870
Medina	3	16,463	....	16,463
Meigs	25	909,896	14,151	924,047
Monroe	1	1,180	....	1,180
Morgan	3	223,017	3,372	226,389
Muskingum	32	349,614	4,660	354,274
Noble	16	663,077	4,788	667,865
Perry	51	988,880	9,339	998,219
Portage	2	87,288	4,260	91,548
Scioto	1	829	....	829
Stark	47	387,176	10,858	398,034
Summit	2	51,269	900	52,169
Trumbull	2	1,698	....	1,698
Tuscarawas	72	1,306,424	18,539	1,324,963
Vinton	8	94,686	1,182	95,868
Washington	2	284	....	284
Wayne	4	106,925	3,780	110,705
State	789	$27,478,784	$331,750	$27,810,534

TABLE 24—NUMBER OF MEN EMPLOYED AND TONS OF COAL MINED PER FATAL ACCIDENT AND PER ACCIDENT RESULTING IN A DISABILITY OF MORE THAN THREE WEEKS, (*a*), FOR THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

(The number of fatal accidents in this table and in Table —— is based upon fatal accidents as reported to the Inspector of Mines during 1916, and differs from the number used in all other accident tables in this report, which is based upon awards under the Workmen's Compensation Act, as tabulated by the Department of Investigation and Statistics. The difference is due to the fact that the Inspector of Mines receives reports of fatal accidents immediately after they occur, while the Department of Investigation and Statistics tabulates accidents only after the claims have been heard and allowed. The Inspector of Mines received the reports of thirty-two fatal accidents which are excluded from the tables based on awards. Twenty-four were not passed upon and awards made until 1917; one is still pending before the Industrial Commission; four occurred in mines employing less than five men and hence the Workmen's Compensation Act did not apply to them; while in three cases no claims were filed up to the time of this tabulation. On the other hand, the tables based on awards includes eight deaths which occurred during 1915, and appeared in "Statistics of Mines and Quarries" for that year, but the awards for which were not made until 1916, and two cases which happened in 1916 are charged against mining although not counted as mine accidents by the Department of Mines.

There is a difference of twenty-two, therefore, between the number of deaths included in the tables based on returns to the Inspector of Mines and data tabulated by the Department of Investigation and Statistics, from claims for fatal cases heard and allowed by the Industrial Commission during 1916.)

County.	Total Number of Men Employed.	Total Number of Tons Mined.	Fatal Accidents.			Accidents Resulting in a Disability of More Than Three Weeks. (*a*)		
			Number.	Number of Men Employed per Life Lost.	Tons of Coal Mined per Life Lost.	Number.	Number of Men Employed per Accident.	Tons of Coal Mined per Accident.
Athens	6,074	3,743,672	10	607	374,367	145	42	25,818
Belmont	11,290	10,553,088	33	342	319,791	560	20	18,809
Carroll	413	326,714	4	103	81,679	....	....	....
Columbiana	655	518,862	....	....	....	58	11	8,946
Coshocton	546	316,045	....	....	....	23	24	13,741
Gallia	27	6,883	....	....	....	5	5	1,377
Guernsey	4,212	4,397,262	13	324	338,251	135	31	32,572
Harrison	900	990,641	4	225	247,660	23	39	43,071
Hocking	1,727	1,435,188	2	864	717,594	10	173	143,519
Holmes	45	14,826	....	....	....	....	....	....
Jackson	1,507	727,999	5	301	145,600	34	44	21,412
Jefferson	5,266	5,366,393	14	376	383,314	253	21	21,211
Lawrence	323	166,261	4	81	41,565	7	46	23,752
Mahoning	60	28,842	....	....	....	2	30	14,421
Medina	21	9,205	....	....	....	....	....	....
Meigs	1,675	1,025,036	8	209	128,130	52	32	19,712
Monroe	5	988	....	....	....	....	....	....
Morgan	279	258,721	....	....	....	9	31	28,747
Muskingum	600	396,289	1	600	396,289	25	24	15,852
Noble	830	864,695	2	415	432,348	19	44	45,510
Perry	2,148	1,195,127	2	1,074	597,564	75	29	15,935
Portage	124	69,432	....	....	....	3	41	23,144
Scioto	18	617	....	....	....	....	....	....
Stark	700	335,487	....	....	....	29	24	11,569
Summit	71	38,260	....	....	....	3	24	12,753
Trumbull	5	1,116	....	....	....	....	....	....
Tuscarawas	1,730	1,547,110	6	288	257,852	76	23	20,357
Vinton	190	106,376	....	....	....	4	48	26,594
Washington	1	421	....	....	....	....	....	....
Wayne	150	84,996	....	....	....	2	75	42,498
Total	41,592	34,526,552	108	385	319,690	1,552	27	22,246

a Accidents of this class were described as "serious accidents" in reports of the Bureau of Mines prior to 1914.

TABLE 25—NUMBER OF MEN EMPLOYED AND TONS OF COAL MINED PER FATAL ACCIDENT AND PER ACCIDENT RESULTING IN A DISABILITY OF MORE THAN THREE WEEKS (*a*), FOR EACH YEAR FROM 1884 TO 1916 INCLUSIVE.

(The figures for "accidents resulting in a disability of more than three weeks" were reported for 1913 and previous years to the Bureau of Mines by the Coal Mine operators. The figures from and including 1914 are based on accident claims for which awards were made by the Industrial Commission of Ohio under the Workmen's Compensation Act.)

Year.	Total Number of Men Employed.	Tons Mined.	Fatal Accidents.			Accidents Resulting in a Disability of More Than Three Weeks. (*a*)		
			Number.	Number of Men Employed per Life Lost.	Tons of Coal Mined per Life Lost.	Number.	Number of Men Employed per Accident.	Tons of Coal Mined per Accident.
1884	20,101	7,650,062	26	773	294,233	40	503	191,252
1885	19,704	7,816,179	32	616	244,256	51	386	153,258
1886	20,437	8,435,211	43	475	196,168	62	330	136,052
1887	22,237	10,301,708	36	618	286,159	75	296	137,356
1888	21,801	10,910,946	29	752	376,240	78	280	139,884
1889	23,295	10,907,385	33	706	330,527	52	448	209,757
1890	22,192	11,788,859	42	528	280,687	52	427	226,709
1891	23,997	13,050,187	44	545	296,595	66	364	197,730
1892	26,972	14,599,908	42	642	347,617	93	290	156,988
1893	28,810	14,828,097	34	847	436,121	124	232	119,581
1894	31,493	11,910,219	45	700	264,672	116	271	102,674
1895	28,998	13,683,879	52	558	263,152	152	191	90,026
1896	28,446	12,912,608	41	694	314,942	159	179	81,211
1897	28,785	12,448,822	40	720	311,221	142	203	87,668
1898	28,365	14,058,155	55	516	255,603	155	183	90,697
1899	28,028	15,908,934	59	475	269,643	204	137	77,985
1900	31,702	19,426,649	68	466	285,686	207	153	93,849
1901	33,505	20,321,290	72	465	282,240	276	121	73,628
1902	37,421	23,929,267	81	462	295,423	298	126	80,300
1903	41,396	24,573,266	114	363	215,555	324	128	75,843
1904	45,834	24,583,815	118	388	208,337	316	145	77,797
1905	44,193	25,834,657	114	388	226,620	372	119	69,448
1906	46,501	27,213,495	127	306	214,279	384	121	70,868
1907	47,876	32,365,949	153	313	211,542	493	97	65,651
1908	50,267	26,287,800	112	449	234,712	426	118	61,708
1909	47,019	27,755,032	115	409	241,348	467	101	59,433
1910	48,830	34,424,951	161	303	213,820	471	104	73,089
1911	48,407	30,342,039	109	444	278,367	375	129	80,912
1912	47,234	34,444,291	136	347	253,267	395	120	87,201
1913	48,420	36,285,468	165	293	219,912	530	91	68,463
1914	46,965	18,736,407	61	770	307,154	901	52	20,795
1915 *b*	41,430	22,627,046	66	628	342,834	1,140	36	19,848
1916	41,592	34,526,552	108	385	319,690	1,552	27	22,246

a Accidents of this class were described as "serious accidents" in reports of the Bureau of Mines prior to 1914.

b Three deaths, one in each of the three counties of Belmont, Guernsey and Perry, occurred during 1916, which were the results of accidents occurring in 1915, but which were not included in the fatal accidents as reported for that year. These three deaths have been added to the total for 1915, thus raising the number of fatal accidents from 63 as published in Report No. 25, Department of Investigation and Statistics, "Statistics of Mines and Quarries of Ohio, 1915," to 66, and the number of employes and number of tons of coal mined per fatal accident, have been revised accordingly. Two of these accidents have been deducted from 1,142, the number of accidents resulting in disability of more than three weeks, tabulated for 1915, thus reducing the number of accidents of this class to 1,140, and necessitating a revision of the figures for the number of employes and number of tons of coal mined per accident resulting in a disability of more than three weeks. One of the deaths added was not deducted from the accidents causing a disability of more than three weeks for the reason that although the accident occurred on December 29, 1915, the case was not reported until 1916. It was not therefore counted in the 1915 tabulation.

TABLE 26—AWARDS BY THE INDUSTRIAL COMMISSION OF OHIO FOR ACCIDENTS IN COAL MINES DURING THE YEAR ENDING DECEMBER 31, 1916.

(Medical and Hospital expenses of firms carrying self-insurance under the State plan are not included in this statement, as under the law treatment is provided by such firms.)

County.	Fatal Accidents.		Accidents Causing Permanent Partial Disability.		Accidents Causing Temporary Disability for More Than Seven Days.		Accidents Causing Temporary Disability for Seven Days or Less.		Grand Total.	
	Number of Claims.	Total Amount Awarded. (Including Death Benefits, Medical and Hospital and Funeral Expenses.)	Number of Claims.	Total Amount Awarded. (Including Compensation and Medical and Hospital Expenses.)	Number of Claims.	Total Amount Awarded. (Including Compensation and Medical and Hospital Expenses.)	Number of Claims.	Total Amount Awarded. (Including Medical and Hospital Expenses Only Awarded Under the Act.)	Number of Claims.	Total Amount Awarded.
Athens	10	$26,385 75	10	$3,389 00	233	$13,739 00	74	$250 00	327	$43,763 75
Belmont	31	58,649 01	33	17,251 00	1,074	61,014 00	296	1,257 00	1,434	138,171 01
Carroll	....	....	....	....	3	48 00	....	....	3	48 00
Columbiana	2	6,937 00	4	1,000 00	84	6,200 00	14	68 00	104	14,205 00
Coshocton	....	....	1	137 00	36	2,419 00	1	5 00	38	2,561 00
Gallia	....	....	....	....	5	395 00	....	....	5	395 00
Guernsey	11	22,991 00	12	2,882 00	295	11,933 00	126	305 00	444	38,111 00
Harrison	....	....	2	1,059 00	38	2,799 00	8	5 00	48	3,863 00
Hocking	1	2,677 00	1	134 00	25	896 00	41	7 00	68	3,714 00
Jackson	2	5,422 00	3	1,187 00	62	2,526 00	8	39 00	75	9,174 00
Jefferson	12	18,841 00	10	6,169 00	433	25,960 00	39	151 00	494	51,121 00
Lawrence	2	4,349 00	1	174 00	12	452 00	1	2 00	16	4,977 00
Mahoning	....	....	....	....	4	220 00	....	....	4	220 00
Meigs	6	16,163 00	3	1,839 00	84	4,188 00	4	28 00	97	22,218 00
Morgan	....	....	1	177 00	17	683 00	....	....	18	860 00
Muskingum	....	....	3	2,248 00	34	2,565 00	1	....	38	4,813 00
Noble	3	6,056 20	2	3,625 00	39	1,028 00	22	4 00	66	10,713 20
Perry	3	4,454 00	5	2,714 00	115	7,118 00	8	34 00	131	14,320 00
Portage	....	....	....	....	5	240 00	....	....	5	240 00
Stark	1	150 00	4	3,941 00	50	3,298 00	8	39 00	63	7,428 00
Summit	....	....	....	....	4	384 00	....	....	4	384 00
Trumbull	....	....	....	....	1	13 00	....	....	1	13 00
Tuscarawas	2	310 00	3	2,362 00	132	8,025 00	21	104 00	158	10,801 00
Vinton	....	....	....	....	6	359 00	2	10 00	8	369 00
Wayne	....	....	....	....	2	138 00	....	....	2	138 00
State	86	$178,384 96	98	$50,288 00	2,793	$156,690 00	669	$2,308 00	3,646	$382,620 96

TABLE 27—TIME COST OF COAL MINE ACCIDENTS DURING THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

A. FATAL ACCIDENTS.

(This table is based upon claims for fatal accidents as tabulated by the Department of Investigation and Statistics. See prefatory note to Table ——.)

County.	Number of Accidents.	Total Life Expectancy According to Carlisle Mortality Table. (Years.)
Athens	10	277.05
Belmont	31	954.54
Columbiana	2	61.32
Guernsey	11	367.05
Hocking	1	27.61
Jackson	2	67.88
Jefferson	12	386.56
Lawrence	2	60.46
Meigs	6	168.26
Noble	3	115.26
Perry	3	63.60
Stark	1	28.96
Tuscarawas	2	42.04
State	86	2,620.59

B. ACCIDENTS CAUSING PERMANENT PARTIAL DISABILITY.

County.	Number of Accidents.	Number of Days for Which Compensation Was Allowed Under the Ohio Law.
Athens	10	2,076
Belmont	33	10,538
Columbiana	4	526
Coshocton	1	70
Guernsey	12	2,975
Harrison	2	455
Hocking	1	700
Jackson	3	525
Jefferson	10	3,293
Lawrence	1	105
Meigs	3	945
Morgan	1	175
Muskingum	3	1,155
Noble	2	2,625
Perry	5	1,759
Stark	4	1,995
Tuscarawas	3	840
State	98	30,757

C. ACCIDENTS CAUSING TEMPORARY DISABILITY.

County.	Accidents Causing Disability of More Than Seven Days.		Accidents Causing Disability of Seven Days or Less.		Total.	
	Number of Accidents.	Total Number of Days Lost.	Number of Accidents.	Total Number of Days Lost.	Number of Accidents.	Total Number of Days Lost.
Athens	233	10,022	74	181	307	10,203
Belmont	1,074	37,921	296	864	1,370	38,785
Carroll	3	53			3	53
Columbiana	84	3,737	14	22	98	3,759
Coshocton	36	1,551	1		37	1,551
Gallia	5	224			5	224
Guernsey	295	9,315	126	359	421	9,674
Harrison	38	1,747	3	10	41	1,757
Hocking	25	717	41	155	66	872
Jackson	62	1,923	8	20	70	1,943
Jefferson	433	16,349	39	147	472	16,496
Lawrence	12	400	1	6	13	406
Mahoning	4	154			4	154
Meigs	84	2,870	4	3	88	2,873
Morgan	17	464			17	464
Muskingum	34	1,545	1	6	35	1,551
Noble	39	1,098	22	96	61	1,194
Perry	115	4,641	8	23	123	4,664
Portage	5	170			5	170
Stark	50	1,998	8	25	58	2,023
Summit	4	220			4	220
Trumbull	1	16			1	16
Tuscarawas	132	4,886	21	147	153	5,033
Vinton	6	289	2		8	289
Wayne	2	64			2	64
State	2,793	102,374	669	2,064	3,462	104,438

TABLE 28—SUMMARY OF FATAL ACCIDENTS DURING THE YEAR ENDING DECEMBER 31, 1916, BY COUNTIES.

(The number of fatalities ascribed to each specific cause is entered in parenthesis after the description of the cause.)

Athens County—

Falls of coal—Barring down coal when it fell suddenly catching deceased and injuring him internally. (1)

Shoveling dust from mining machine when coal rolled down catching deceased and breaking his back. Lived fifty-nine days after accident. (1)

Falls of slate—Caught by fall of slate or stone and crushed. (6)

Mine cars and motors—Caught between cars while coupling and was crushed through the abdomen so badly that he died the next day. (1)

Animals—Deceased was breaking in a horse in the mine when it ran away, throwing him under the cars and crushing him. (1)

Belmont County—

Self-acting inclined planes—Struck by an empty mine car which had become uncoupled from trip and ran back down the incline. Chest and legs crushed. (1)

Electric shock—The car deceased was riding in jumped the track and in attempting to put it back on the track his head came in contact with the trolley wire, electrocuting him. (1)

While walking out of the mine his head came in contact with a steel beam which had become charged. Electrocuted. (1)

Explosions of powder or dynamite—Handling keg of powder when it exploded, burning deceased so badly that he died eight days after the accident. (1)

Supposition is that the deceased dropped his light into keg of powder while making cartridge. (2)

Falls of coal—Fall of face coal caught deceased, crushing him through the abdomen so that he died eight days later. (1)

Falls of roof—Crushed by fall of slate or stone. (14)

Mine cars and motors—Deceased unhooked mule from trip and in getting off he slipped in such a manner that his leg was caught under car and crushed. Infection developed and he died thirty-three days later. (1)

Coupling cars when another car bumped into him throwing him under the car. Chest and shoulders crushed. (1)

Motor jumped track and caught deceased between motor and rib crushing him through the chest. (1)

Cribbing up a car he accidentally knocked brake off letting car go, catching him between car and face. Crushed through the abdomen so badly that he died four days later. (1)

Riding on front end of motor when it jumped the track catching him between motor and rib. (1)

Rolled between car and rib crushing pelvis so badly that he died seven days later. (1)

Run down by motor trip and neck broken. (1)

Deceased attempted to run loaded car out of his room to entry which is on a steep grade, and in some manner while operating the brake on the front end of the car he fell under the car breaking his back and neck. (1)

TABLE 28 — SUMMARY OF FATAL ACCIDENTS DURING THE YEAR ENDING DECEMBER 31, 1916, BY COUNTIES — Continued.

BELMONT COUNTY — Concluded.

Miscellaneous — Superintendent was taking orders for more cars to station agent when he was struck by passenger train and killed. (1)
Superintendent was coming to mine with week's payroll when he was held up by two bandits, shot and killed. (1)

Columbiana County —

Repairing Machines —In putting a mining machine together deceased let a part slip lacerating two fingers on his right hand. Infection developed and he died eight days later. (1)

Mine cars and motors — In collision of two motors deceased was crushed through hips and died twenty-three days later. (1)

Guernsey County —

Falls of coal — Deceased was lying under standing coal (having fired shot) to take out binder when coal fell on him crushing his head. (1)
Deceased was drilling when his buddy cut out a sprag left by machine man to hold up the coal, letting coal roll over and crush him. (1)

Falls of roof — Caught and crushed by fall of slate or stone. (6)

Falls of draw slate — Deceased and buddy were taking down draw slate in entry when a large piece fell suddenly, killing him instantly. (1)

Mine cars and motors — Deceased was motorman and ran into a cut of cars left on track, crushing him between cars and motor. (1)
While running motor deceased raised up to put a bucket of sand in sand box when his head struck roof knocking him off motor and under the cars. (1)

Hocking County —

Falls of roof — Deceased was loading coal when roof fell, catching him and crushing his head. (1)

Jackson County —

Mine cages — Deceased stepped into bottom of shaft and was struck by descending cage, breaking his neck. (1)

Falls of roof — Deceased was caught by fall of slate and chest crushed. Died six days later. (1)

Jefferson County —

Explosions of powder or dynamite — Deceased was struck by flying coal from a shot fired in the adjoining room which broke through into his room. (1)

Falls of roof — Crushed by fall of slate or stone. (5)

Falls of draw slate — Caught by fall of soap stone. (1)

Mine cars and motors — Deceased was struck and run over by trip. (1)
Deceased was riding front end of motor which collided with one coming in the opposite direction. (1)
Car jumped the track knocking out a post which let a large rock fall catching deceased and crushing him. (1)
Coupling cars to motor when he slipped and fell between them crushing his chest so badly that he died the next day. (1)

Miscellaneous — Deceased was dropping loaded car out from under tipple when he lost his balance and fell in such a manner that the rear trucks cut off his head. (1)

TABLE 28—SUMMARY OF FATAL ACCIDENTS DURING THE YEAR ENDING DECEMBER 31, 1916, BY COUNTIES—Concluded.

Lawrence County—

Falls of roof—Caught under a fall of slate or stone. (2)

Meigs County—

Falls of coal—Deceased was tightening up jack on mining machine when top coal rolled over on him breaking his back. (1)

Falls of roof—Caught under fall of slate or stone. (4)

Falls of draw slate—Deceased was loading coal when he was caught under fall of draw slate breaking his back. (1)

Noble County—

Falls of coal—Clearing out from under coal when it rolled over, crushing deceased. (1)

Falls of roof—Loading coal in car when a large piece of slate fell catching his leg and breaking it. Gangrene developed and he died a month later. (1)

Explosions of powder and dynamite—Deceased was preparing a cartridge when it was ignited by a squib with which he was cleaning his blasting barrel and this in turn ignited his barrel of powder. (1)

Perry County—

Electricity—Deceased was walking along main entry with a shovel over his shoulders. The shovel struck the trolley wire and he was thrown approximately ten feet alighting on his head. (1)

Falls of coal—Coal rolled over, catching deceased and crushing him. (1)

Mine cars and motors—Coupling on trip broke, allowing the cars to run back down the hill, catching deceased between car and pillar. (1)

Stark County—

Explosions of powder or dynamite—Evidence tends to show that deceased went back to see why blast did not go off and as he entered the room the blast went off, crushing him. (1)

Tuscarawas County—

Falls of roof—Deceased was caught under a fall of slate and his head was crushed. (1)

Mine cars and motors—Deceased was run down by motor trip and instantly killed. (1)

TABLE 29—NUMBER OF NON-FATAL ACCIDENTS ASCRIBED TO EACH SPECI

A. PERMANENT PARTIAL DISABILITY.

Cause.	County.						
	Athens.	Bel-mont.	Colum-biana.	Coshoc-ton.	Guern-sey.	Harri-son.	Hock-ing.
Accidents due to Machinery —							
Electric motors and dynamos							
Steam engines		1					
Mining machines		2	1		1		
Pumps							
Accidents to due to Objects —							
From flying or recoiling objects					1		
Falls of coal	1						
Falls of roof	1	9			1	1	
Falls of draw slate	1	2			1		
Falling or shifting or dropping of objects or tools as result of handling, moving, carrying or piling by hand	1	1			1		
Accidents due to Falls —							
Falling, slipping or stumbling on floors or other ordinary surfaces		1					
Accidents due to Trains, Street Cars, Mine Cars and all kinds of Conveyances Running on Tracks (exclusive of accidents where a horse or draft animal was the primary cause) —							
Collisions of two conveyances running on tracks	1	1					
Coupling and uncoupling cars and trucks		5	2		3		
Derailments	1	1					
Getting cars on or off tracks		1					
Jammed between mine car and rib, between two mine cars, etc.	1	1		1			
Mine Cars, miscellaneous	1	2					
Accidents due to Horses and Mules —							
Due to sudden stops or starts			1				
Accidents due to Hand Tools and Simple Apparatus	2	6			4	1	1
State	10	33	4	1	12	2	1

FIED CAUSE DURING THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

A. PERMANENT PARTIAL DISABILITY.

County.										
Jackson.	Jefferson.	Lawrence.	Meigs.	Morgan.	Muskingum.	Noble.	Perry.	Stark.	Tuscarawas.	State.
...	1	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	1
...	1	...	1	...	1	...	...	2	1	10
...	1	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	1	...	2
1	...	...	...	...	...	...	1	...	...	3
...	1	...	1	...	...	...	...	...	...	14
...	...	...	...	...	...	...	...	...	...	4
1	1	...	...	...	...	...	...	...	1	6
...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	1	...	...	...	...	...	3
...	2	...	1	...	1	1	1	...	...	16
...	...	1	...	...	...	...	...	...	...	3
...	1	...	...	...	...	...	...	...	...	2
1	...	...	...	...	...	1	...	...	...	5
...	...	...	...	...	...	...	...	...	1	4
...	...	...	...	...	...	...	...	...	...	2
...	2	...	...	...	...	...	3	1	...	20
3	10	1	3	1	3	2	5	4	3	98

TABLE 29—NUMBER OF NON-FATAL ACCIDENTS ASCRIBED TO EACH SPECI

B. TEMPORARY DISABILITY.

Cause.	County.									
	Athens.	Bel-mont.	Car-roll.	Colum-biana.	Coshoc-ton.	Gallia.	Guern-sey.	Harri-son.	H'ck-ing.	Jack-son.
Accidents due to Machinery —										
Motors and engines —										
Electric motors and dynamos	....	.....	.....	....	....	....	1	....	.....	.....
Gas and gasoline engines....	....	.....	.....	....	....	....	....	....	.....	1
Steam engines	1	.....	.....	....	....	....	....	....	1	.....
Transmission apparatus —										
Cog, gear and friction wheels	....	.....	.....	2	....	....	....	....	.....	.....
Drive belts and pulleys associated with them......	....	.....	.....	....	....	....	1	....	.....	.....
Working machines —										
Drill press, boring and reaming machines	1	.....	.....	....	....	....	....	....	.....	.....
Mining machines	19	82	.....	3	....	....	23	....	1	2
Pumps	1	.....	.....	....	....	....	....	....	.....	.....
Saws	1	.....	.....	....	....	....	1	....	.....	.....
Hoisting apparatus and conveyors —										
Mine cages	1	4	.....	1	....	....	8	....	.....	.....
Self-acting inclined planes...	1	.....	.....	1	....	....	....	....	.....	.....
Hoisting apparatus, miscellaneous	....	.....	.....	1	....	....	....	....	.....	.....
Machinery not otherwise classified	5	5	.....	....	....	....	1	....	1	.....
Accidents due to Nature of Material Used or Similar Working Conditions —										
Corrosive materials	....	1	.....	1	....	....	....	....	.....	1
Electricity —										
Burns	5	10	.....	3	....	....	9	....	.....	1
Falls due to shocks..........	1	4	.....	....	....	....	....	....	.....	.....
Shocks	1	4	.....	....	....	....	1	....	.....	.....
Electricity, miscellaneous ..	....	2	.....	....	....	....	2	1	.....	.....
Explosions and heat of explosive substances —										
Of gas	....	3	.....	....	....	....	2	....	.....	.....
Of petroleum, benzine, gasoline, etc.	....	.....	.....	....	....	....	....	....	.....	.....
Of powder and other high explosive —										
Regular	1	3	.....	....	....	....	....	....	.....	1
Premature	1	3	.....	....	....	....	....	....	.....	.....
Regular	....	2	.....	....	....	....	....	....	.....	2
Hot materials, hot objects and great heat —										
Hot liquids and hot water..	1	4	.....	....	....	....	1	....	.....	.....
Hot objects or tools.........	....	5	.....	....	....	....	....	....	.....	.....
Injuries due to handling glass, porcelain and similar materials	1	2	.....	....	....	....	....	....	1	.....
Accidents due to Objects —										
Flying and recoiling objects....	3	15	.....	....	....	....	8	....	7	.....
Bumping against objects and tools	1	21	.....	4	....	....	8	2	2	.....
Falling, sliding, shifting or rolling objects —										
Falls of coal............	27	84	2	3	1	1	35	5	6	5
Falls of roof............	43	270	.....	11	8	2	50	8	3	8
Falls of draw-slate..........	4	12	.....	5	1	....	4	1	.....	2
Falling down or shifting of piled up objects...........	....	1	.....	....	....	....	1	....	1	.....
Falling or shifting objects or tools while loading or unloading by hand.........	7	85	.....	2	2	....	11	....	2	3
Falling or shifting or dropping objects or tools as a result of handling, moving, etc., by hand.........	24	118	.....	4	1	....	36	4	8	1
Falling, sliding, etc., of miscellaneous objects	4	25	.....	3	....	....	3	1	8	2
Handling sharp edged objects..	....	9	.....	1	....	....	1	....	.....	1
Nails, splinters, etc., attached..	2	6	.....	....	....	....	3	....	1	.....
Stepping on nails and other sharp objects	2	5	.....	....	....	1	2	1	8	9

FIED CAUSE, DURING THE YEAR ENDING DEC. 31, 1916, BY COUNTIES—Concl'd.

B. TEMPORARY DISABILITY — Concluded.

County.

Jefferson.	Lawrence	Mahoning.	Meigs.	Morgan.	Muskingum.	Noble.	Perry.	Portage.	Stark.	Summit.	Tr'mbull.	Tuscarawas.	Vinton.	Wayne	State.
......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3
......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	2
......	1	......	......	......	......	......	......	......	......	......	......	......	......	......	8
2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5
4	......	......	1	......	1	1	......	1	......	......	......	1	......	......	36
1	......	......	1	......	......	......	......	......	......	......	......	2	......	......	14
4	......	......	1	......	......	......	1	......	1	......	......	2	1	......	27
2	......	......	3	1	......	2	4	......	......	......	......	1	......	......	43
41	4	......	8	2	2	9	15	......	7	......	......	13	......	......	391
3	......	......	......	......	......	......	1	......	......	......	......	4	......	......	42
472	13	4	88	17	35	61	128	5	58	4	1	153	8	2	3,462

TABLE 25—NUMBER OF NON-FATAL ACCIDENTS ASCRIBED TO EACH SPECI

B. TEMPORARY DISABILITY—Continued.

Cause.	County.									
	Athens.	Belmont.	Carroll.	Columbiana.	Coshocton.	Gallia.	Guernsey.	Harrison.	H'ck-ing.	Jackson.
Accidents due to Other Means of Transportation (exclusive of Falls and of those Accidents where a Horse or Other Draft Animal was the Primary Cause—										
Collisions (including collisions of vehicles with trains or cars		1		1				1		
Jammed between vehicles, between vehicles and objects, etc.		1								
Other means of transportation not otherwise classified		2								
Accidents due to Horses and Mules—										
Falls off of		2								1
Kicks		21					3		1	2
Runaways	2	7						1		
Due to sudden stops or starts	2	7				1	5		1	1
Accidents due to horses and mules, miscellaneous	5	17		1	1		3	1	1	1
Accidents due to Hand (Trade) Tools and Simple Apparatus	41	164		9	4		57	1	8	6
Accidents due to Miscellaneous Causes	2	7		7	1		9	1	4	3
State	[illegible]	[illegible]	3	98	37	5	421	41	66	70

FIED CAUSE, DURING THE YEAR ENDING DEC. 31, 1916, BY COUNTIES—Concl'd.

B. TEMPORARY DISABILITY — Concluded.

County.															
Jefferson.	Lawrence	Mahoning.	Meigs.	Morgan.	Muskingum.	Noble.	Perry.	Portage.	Stark.	Summit.	Tr'mbull.	Tuscarawas.	Vinton.	Wayne	State.
															3
							1								2
	1														3
2															5
4			1		1	1		1				1			36
1			1									2			14
4			1				1		1			2	1		27
2			3	1		2	4					1			43
41	4		8	2	2	9	15		7			13			391
3							1					4			42
472	13	4	88	17	35	61	123	5	58	4	1	153	8	2	3,462

TABLE 30 — ACCIDENTS RESULTING IN TEMPORARY DISABILITY DURING THE YEAR ENDING DECEMBER 31, 1916, CLASSIFIED BY NATURE OF INJURY AND BY PART OF BODY INJURED.

Nature of Injury and Part of Body.	Number of Claims.
Abrasions, Bruises, Contusions, Crushes, Cuts, Lacerations, Punctures (including Wounds from Splinters) and Scratches —	
Head, neck and face —	
Eye or eyelids	71
Face	28
Scalp	80
All others	39
Trunk —	
Back, chest, sides, abdomen	126
Groin, testicles, scrotum	8
All others	18
Upper extremities —	
Arm and shoulder	101
Fingers, thumb, hand	750
Wrist	16
All others	2
Lower extremities —	
Ankle	43
Hip and leg	299
Toes, foot	408
All other	5
Not otherwise classified	94
Amputation or Loss of Part Not Sufficient to Cause Permanent Disability —	
Tooth or teeth	3
Portions of fingers	13
Portions of toes	2
Burns (including Electric Burns), Cauterizations, Scalds —	
Head, neck and face —	
Eye and eyelids	9
Face	9
All others	3
Trunk	2
Upper extremities —	
Fingers, thumb, hand	20
All others	9
Lower extremities —	
Leg	4
Not otherwise classified	11
Dislocations —	
Head, neck, face —	
Jaw, lower	3
Trunk —	
Collar bone	7
Upper extremities —	
Fingers, thumb, hand, any joint	7
Elbow	5
Shoulder	4
Wrist	3
Lower extremities —	
Ankle	8
Hip	7
Knee	5
All others	6
Foreign Body in Eye	117
Fractures —	
Head, neck, face —	
Nose	4
All others	6
Trunk —	
Collar bone	19
Pelvic bone or bones	8
Rib or ribs	115
All others	11
Upper extremities —	
Arm	40
Wrist	16
Fingers, thumb, hand, any bone	82
Lower extremities —	
Ankle	9
Leg	124
Hip	8
Toes or foot, any bone	88
Not otherwise classified	10
Hernia —	
Inguinal	10
Internal Injuries	5
Photophobia (Extreme Sensitiveness to Light)	4
Sprains and Strains —	
Head, neck and face —	
Neck	4
Trunk —	
Back	170
Side	8
All others	11
Upper extremities —	
Shoulder	15
Wrist	33
Finger, thumb, hand, any joint	6
All other	6
Lower extremities —	
Ankle	98
Knee	31
Hip	8
Foot, toes — any joint	18
All others	7
Not otherwise classified	8
Suffocation	2
Synovitis and Tenosynovitis	7
Simultaneous Injuries of Two or More Types —	
Head, neck, face — part not specified	3
Trunk, part not specified	8
Upper extremities —	
Finger, thumb, hand	4
All others	2
Lower extremities —	
Toes, foot	5
Leg	5
All others	8
Not otherwise classified	77
Simultaneous Injuries of Two or More Types, to Two or More Parts of the Body, All Other Complication and General Injuries, Impossible to Localize, and Miscellaneous Injuries	19
Total	3,462

TABLE 31—DURATION OF DISABILITY IN ACCIDENTS CAUSING TEMPORARY DISABILITY, DURING THE YEAR ENDING DECEMBER 31, 1916. BY COUNTIES.

County.	Total Number of Accidents for which Claims Were Allowed.	Number of Accidents in which Disability Terminated Within					
		First Week.	Second Week.	Third Week.	Fourth Week.	Fifth Week to Thirteenth Week.	Fourteenth Week or Later.
Athens	307	74	48	40	41	84	20
Belmont	1,370	296	253	261	156	334	70
Carroll	3	....	1	2	....	....	....
Columbiana	98	14	11	15	23	28	7
Coshocton	37	1	7	6	8	12	3
Gallia	5	....	....	....	1	4	....
Guernsey	421	126	85	75	40	82	13
Harrison	41	3	7	8	3	12	8
Hocking	66	41	10	5	2	7	1
Jackson	70	8	14	14	17	14	3
Jefferson	472	39	83	97	80	140	33
Lawrence	13	1	1	4	1	6	....
Mahoning	4	....	....	2	....	2	....
Meigs	88	4	13	19	21	27	4
Morgan	17	....	3	5	3	6	....
Muskingum	35	1	3	6	5	16	4
Noble	61	22	17	3	7	11	1
Perry	123	8	18	22	13	52	10
Portage	5	....	....	2	1	2	....
Stark	58	8	9	12	3	21	5
Summit	4	....	1	....	1	1	1
Trumbull	1	....	....	1	....	....	....
Tuscarawas	153	21	24	32	18	51	7
Vinton	8	2	1	1	1	2	1
Wayne	2	....	....	....	1	1	....
Total	3,462	669	609	632	446	915	191

FIRE CLAY MINES.

PRODUCTION.

During the year ending December 31, 1916, 2,353,465 tons of fire clay were mined in Ohio. This is a gain of 303,801 tons, or 14.8 per cent., above the production for 1915. One hundred and three mines reported production during the year. The following table shows the annual fire clay production of the State from 1884 to 1916, inclusive, and annual gain or loss for each year compared with the year next preceding:

ANNUAL FIRE CLAY PRODUCTION FROM 1884 TO 1916 INCLUSIVE, AND ANNUAL GAIN OR LOSS COMPARED WITH PRECEDING YEAR.

Year.	Tons Produced.	Gain.		Loss.	
		Tons.	Per Cent.	Tons.	Per Cent.
1884	168,208				
1885	153,756			14,452	8.5
1886	266,709	112,953	73.5		
1887	366,476	99,767	37.4		
1888	471,794	105,318	28.7		
1889	574,129	102,335	21.7		
1890	833,159	259,030	45.1		
1891	1,087,560	254,401	30.5		
1892	1,253,110	165,550	15.2		
1893	1,032,348			220,762	17.6
1894	942,913			89,435	8.6
1895	844,832			98,081	10.4
1896	827,450			17,382	2.1
1897	822,727			4,723	0.6
1898	1,026,922	204,195	24.8		
1899	1,173,697	146,775	14.3		
1900	1,473,088	299,391	25.5		
1901	1,337,181			135,907	9.2
1902	1,528,829	191,648	14.3		
1903	1,567,603	38,774	2.5		
1904	2,045,848	478,245	30.5		
1905	2,039,292			6,556	*a*
1906	2,126,179	86,887	4.3		
1907	2,177,174	50,995	2.4		
1908	2,004,019			173,155	8.0
1909	2,289,088	285,069	14.2		
1910	2,028,852			260,236	11.4
1911	2,309,188	280,336	13.8		
1912	2,353,510	44,322	1.9		
1913	2,442,121	88,611	3.8		
1914	2,006,380			435,741	17.8
1915	2,049,664	43,284	2.2		
1916	2,353,465	303,801	14.8		

(*a*) Less than one-tenth of one per cent.

Compared with certain preceding years, the production for 1916 showed increases as follows:

14.8 per cent greater than in 1915.
16.0 per cent greater than in 1910.
15.4 per cent greater than in 1905.
59.8 per cent greater than in 1900.

Seventeen counties reported the production of fire clay. The production by counties, together with the per cent of gain or loss as compared with 1915, is shown in the following table:

FIRE CLAY PRODUCTION FOR THE YEAR ENDING DECEMBER 31, 1916, COMPARED WITH THE YEAR ENDING DECEMBER 31, 1915. BY COUNTIES.

County.	Tons Produced.		Production for 1916 Compared with 1915.			
			Gain.		Loss.	
	1915.	1916.	Tons.		Tons.	Per Cent.
Athens	90,151	98,734	8,583	9.5		
Belmont	7,500	15,500	8,000	106.7		
Carroll	249,028	251,834	2,806	1.1		
Columbiana	221,026	272,232	51,206	23.2		
Guernsey	16,000	16,052	52	.3		
Hocking	136,388	122,696			13,692	10.0
Jackson	20,171	22,601	2,430	12.0		
Jefferson	432,739	410,460			22,279	5.1
Lawrence	51,219	54,813	3,594	7.0		
Mahoning	27,687	43,426	15,739	56.8		
Muskingum	12,189	18,732	6,543	53.7		
Perry	85,193	88,955	3,762	4.4		
Scioto	59,236	138,472	79,236	133.8		
Stark	204,073	177,713			26,360	12.9
Summit	13,484	95,568	82,084	608.8		
Tuscarawas	369,459	501,044	131,585	35.6		
Vinton	54,121	24,633			29,488	54.5
State	2,049,664	2,353,465				

Net Gain:

Tons	303,801
Per Cent	14.8

CHARACTER OF OPENING.

Ninety-nine fire clay mines of the State reported as to kind of opening as shown below:

Kind of Opening.	*Number having each specified kind.*
Drift	50
Slope	21
Shaft	15
Drift and slope	2
Drift and shaft	1
Stripping	3
Surface	6
Drift and stripping	99
Total number reporting	99

VENTILATION.

Ninety-five fire clay mines reported on mode of ventilation as follows:

Mode of Ventilation.	*Number having each specified kind.*
Fan	38
Fan and furnace	1
Furnace	17
Exhaust steam and furnace	1
Natural	34
Fan and natural	3
Furnace and natural	1
Total number reporting	95

NUMBER OF EMPLOYES.

One hundred and three establishments reported the number of employes on the fifteenth of each month, or for the payroll nearest the fifteenth. The maximum number was reached in December, when 1,357 employes [illegible] ported, while the minimum number was reached in January [illegible] were reported. The difference between the maximum and [illegible] was 258, a variation of 19.0 per cent. from the maximum.

The following table shows by months the number of employes on the fifteenth of each month, or for the payroll nearest the fifteenth, as reported by 103 mines, and compared with the number reported employed each month during 1915 by 89 establishments:

Month.	Number of employes on the 15th of each month.	
	(89 establishments.)	(103 establishments.)
	1915.	1916.
January	889	1,099
February	842	1,129
March	1,003	1,192
April	1,042	1,248
May	1,117	1,254
June	1,113	1,152
July	1,074	1,287
August	1,039	1,294
September	1,072	1,273
October	1,062	1,328
November	1,108	1,328
December	1,132	1,357

DAYS IN OPERATION.

The following table shows the distribution of 87 fire clay mines of the State according to the number of days in operation during 1915, compared with the number of days in operation as reported by 98 mines in 1916:

Number of Days in Operation.	Number of Mines Reporting.	
	(87 establishments.)	(98 establishments.)
	1915.	1916.
Less than 100	7	3
100 but under 150	7	8
150 but under 200	6	8
200 but under 250	22	20
250 but under 300	30	40
300 but under 314	13	17
314 and over	2	2
Total	87	98

CLASSIFIED RATES OF WAGES.

One hundred and two fire clay mines reported the classified weekly wages of their employes for the week of greatest employment during the year ending December 31, 1916.

The following table presents the classified rates of wages for 1,422 employes:

CLASSIFIED WEEKLY WAGES OF EMPLOYES IN FIRE CLAY MINES FOR THE WEEK OF GREATEST EMPLOYMENT DURING THE YEAR ENDING DECEMBER 31, 1916.

(102 operators reported classified weekly wages of employes.)

Occupation Group.	Number Receiving Each Classified Wage.										
	Under $6.	$6 But Under $7.	$7 But Under $8.	$8 But Under $9.	$9 But Under $10.	$10 But Under $12.	$12 But Under $15.	$15 But Under $18.	$18 But Under $25.	$25 or Over.	Total.
WAGE-EARNERS —											
Inside employes —											
Males	....	....	1	2	21	80	171	288	325	49	937
Outside employes —											
Males	2	....	1	2	38	76	139	155	59	2	474
OFFICE HELP —											
Males	....	....	1	....	1	....	....	1	2	....	5
Females	1	2	....	....	1	....	....	1	1	....	6
Total	3	2	3	4	61	156	310	445	387	51	1,422

TOTAL WAGE AND SALARY PAYMENTS.

The total amount reported by 104 fire clay mines as having been paid out during 1916 for wages and salaries was $982,396. Each of seven counties reported fire clay mine payrolls of more than $50,000 per year.

In order of amount paid out, they were as follows: —

County.	*Toal wage and salary payments.*
Tuscarawas	$195,910
Jefferson	139,275
Carroll	104,062
Columbiana	89,040
Stark	88,496
Scioto	87,992
Perry	86,610

HOURS OF LABOR PER WEEK.

Ninety-five establishments reported the hours of labor per week of employes in fire clay mines, as follows:

Normal hours of labor per week.	*Number of establishments reporting.*
Under 48	3
48	60
Over 48 and under 54	2
54	10
Over 54 and under 60	5
60	15
Total	95

GYPSUM

During 1916, gypsum [illegible] ments in the State, [illegible] operating in Ottawa Coun[illegible]

The production [illegible] cent over the production for [illegible] the last six years is shown [illegible]

Year	
1911	
1912	
1913	
1914	
1915	
1916	

The total amount [illegible] by the four mines was $[illegible]

The number of em[illegible] on the fifteenth of each [illegible] during 1916, is shown belo[illegible]

Month	
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

The following [illegible] classes of emplo[illegible] employment. T[illegible] classified wages [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

GYPSUM.

During 1916, gypsum production was reported by four establishments in the State, one of these being in Erie County, the other three operating in Ottawa County.

The production for 1916 was 279,742 tons, an increase of 11.3 per cent over the production for 1915. Gypsum production in Ohio for the last six years is shown below:

Year.	*Tons produced.*
1911	261,946
1912	254,588
1913	268,261
1914	253,306
1915	251,283
1916	279,742

The total amount paid out for wages and salaries during the year by the four mines was $229,195.

The number of employes in the four gypsum mines of the State on the fifteenth of each month, or for the payroll nearest the fifteenth during 1916, is shown below:

Month.	*Number of employes on the fifteenth.*
January	239
February	278
March	286
April	247
May	291
June	314
July	301
August	287
September	293
October	298
November	320
December	294

The following table shows the rates of wages paid the different classes of employes in the gypsum industry, for the week of maximum employment. The four mines reporting gypsum production all reported classified wages:

CLASSIFIED WEEKLY WAGES OF EMPLOYES IN GYPSUM MINES FOR THE WEEK OF GREATEST EMPLOYMENT DURING THE YEAR ENDING DECEMBER 31, 1916.

Occupation Group.	$10 but under $12	$12 but under $15	$15 but under $18	$18 but under $25	$25 or over	Total.
Wage-Earners — Males — Adults (18 yrs. of age or over.)	2	26	115	173	22	338
Bookkeepers, Stenographers and Office Clerks — Females (18 yrs. of age or over.)	....	....	1	....	....	1
Total	2	26	116	173	22	339

Of the four gypsum mines from which schedules were received for 1916, three reported as in operation for 250 but under 300 days during the year, while one reported as in operation over 300 days.

All four mines reported the regular number of hours per week as 60.

LIMESTONE.

PRODUCTION.

During the year ending December 31, 1916, 12,250,652 tons of limestone were quarried in Ohio. This is a gain of 3,116,974 tons or 34.1 per cent above the production of 1915. The following table summarizes the limestone production of 116 establishments which reported for 1916, as compared with the production reported by 94 establishments in 1915. The notable increases were in the production of limestone for fluxing purposes, and for macadamizing or ballast, the increases being 1,413,535 tons and 1,888,851 tons respectively, for these two classes of product. All production is stated in the short ton of 2,000 pounds:

Purpose for which limestone was used.	*Tons produced 1915 (94 establishments.)*	*Tons produced 1916 (116 establishments.)*
Burned into lime	779,191[a]	606,745[b]
For fluxing purposes	3,344,263	4,757,798
Quarried for cement	316,543	281,445
For macadamizing or ballast	3,721,947	5,610,798
For piers and protection purposes	112,141	76,486
Block or dimension stone	198	63
Ordinary building stone	84,928	42,370
Paving stone	....	330,644
Curbing	....	1,500
For miscellaneous purposes	774,467	542,803
Toal	9,133,678[a]	12,250,652[b]

The total production of lime was reported as 340,626 (c) tons, while the production during 1915 was 463,769 (d) tons.

NUMBER OF EMPLOYES.

One hundred and eighteen establishments reported the number of employes actually employed on the fifteenth of each month, or for the payroll nearest the fifteenth. The maximum number of employes was reached in August when 4,444 were reported, while the minimum was reached in January when 2,786 were reported. The difference between the maximum and minimum was 1,658, a variation of 37.3 per cent from the maximum. Thus, of the men employed in August, more than one-third were unemployed in January.

The following table shows by months the number of employes on the fifteenth of each month, or for the payroll nearest the fifteenth, as reported by 118 establishments, and compared with the number reported employed each month during 1915 by 92 establishments:

---

[a] In addition to this amount, 63,547 tons of lime were produced for which no statement was made as to the amount of stone burnt in order to produce it.

[b] In addition to this amount, 48,735 tons of lime were produced for which no statement was made as to the amount of stone burnt in order to produce it.

[c] Including the 48,735 tons of lime noted above.

[d] Including the 63,547 tons of lime noted above.

Month.	Number of employes on the 15th of each month.	
	(92 establishments.)	(118 establishments.)
	1915.	1916.
January	2,346	2,786
February	2,532	2,998
March	2,841	3,164
April	3,225	3,824
May	3,488	4,116
June	3,796	4,289
July	3,874	4,217
August	3,948	4,444
September	4,349	4,399
October	3,889	4,166
November	3,726	3,850
December	3,290	3,126

DAYS IN OPERATION.

One hundred and twelve establishments reported the number of days during which their quarries were in operation during the year. The following table shows the number of establishments operating each classified number of days compared to the reports from 93 establishments which reported on this inquiry for the year ending December 31, 1915:

Number of Days in Operation.	Number of establishments reporting.	
	1915.	1916.
Less than 100	21	18
100 but under 150	12	33
150 but under 200	16	17
200 but under 250	14	14
250 but under 300	13	14
300 but under 314	14	14
314 and over	3	2
Total	93	112

CLASSIFIED RATES OF WAGES.

One hundred and seventeen establishments reported the classified weekly wages of their employes for the week of greatest employment during the year ending December 31, 1916. The following table presents the classified rates of wages for 5,181 employes:

CLASSIFIED WEEKLY WAGES OF EMPLOYES IN LIMESTONE QUARRIES FOR THE WEEK OF GREATEST EMPLOYMENT DURING THE YEAR ENDING DECEMBER 31, 1916.

(117 operators reported classified weekly wages of employes.)

Occupation Group.	Number Receiving Each Classified Wage.													
	Under $4.	$4 But Under $5.	$5 But Under $6.	$6 But Under $7.	$7 But Under $8.	$8 But Under $9.	$9 But Under $10.	$10 But Under $12.	$12 But Under $15.	$15 But Under $18.	$18 But Under $25.	$25 But Under $35.	$35 or Over.	Total.
Wage-earners —														
Males	8	6	8	18	16	57	138	463	2,178	1,309	655	184	19	5,059
Bookkeepers, stenographers and office clerks —														
Males	....	1	....	....	2	....	3	8	15	25	12	11	6	83
Females	....	2	2	6	....	....	1	5	10	4	8	1	....	39
Total	8	9	10	24	18	57	142	476	2,203	1,338	675	196	25	5,181

TOTAL WAGE AND SALARY PAYMENTS.

One hundred and seventeen establishments reported a total of $2,706,862 paid out for wages and salaries during 1916, as compared with a total payroll of $2,136,216 during 1915.

HOURS OF LABOR.

One hundred and five establishments reported the hours of labor per week as follows:

Normal hours of labor per week.	*Number of establishments reporting.*
Under 48	2
48	3
Over 48 but under 54	1
54	8
Over 54 but under 56	3
58	4
Over 58 but under 60	4
60	80
Total	105

SANDSTONE.

PRODUCTION.

Forty-five firms reported sandstone production for the year ending December 31, 1916. Every effort was made to standardize the units of measure under which sandstone production was classified on the schedules, the largest producers of the State having been consulted as to the best methods of securing the desired data. In certain cases, however, sandstone used for the same purpose was reported according to two different units of measure, and it was impossible to reduce them to a common basis, and to combine them. The following table summarizes the sandstone production of the State for the year ending December 31, 1916:

Purpose for which used.	*Unit of Measure.*	*Quantity Produced 1915 (52 Establishments.)*	*Quantity Produced 1916 (45 Establishments.)*
Rough building stone........	Cubic feet	200,426	679,920
Sawed building stone........	Cubic feet	717,372	696,183
	Linear feet	11,199	5,179
Curbing	Cubic feet	1,493,218	1,248,494
	Linear feet	49,127	7,365
Flagging	Cubic feet	1,010,871	1,019,492
	Square feet	167,309	121,991
Burial vaults	Cubic feet	80,264	14,695
Whetstones, Oilstones, etc..	Gross	1,923	3,103
Grindstones	Tons (2000 lbs.)....	39,395	44,547
Silica Sand	Tons (2000 lbs.)....	309,646	456,420
Sandstone for Miscellaneous purposes. (Includes stone for breakwaters and lake filling, furnace lining, etc..	Tons (2000 lbs.)....	123,221	335,179
	Cubic feet	71,452	....

NUMBER OF EMPLOYES.

Forty-four of the forty-five firms reporting production, reported the number of employes on the fifteenth of each month, or for the payroll nearest the fifteenth. The maximum number was reported for August, when 2,060 employes were reported. The minimum number, 1,615 was reached in February. The difference between the maximum